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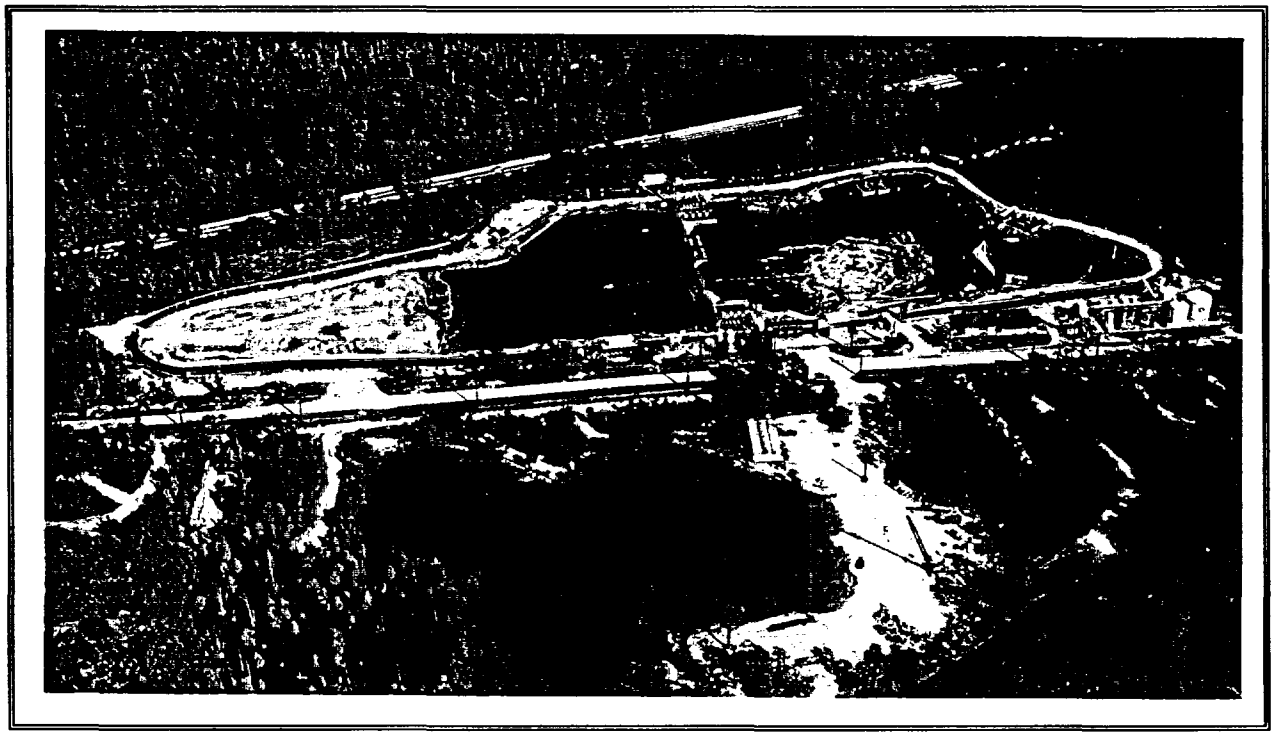
REDACTED VERSION

French Ltd. Project

FLTG, Inc.
Crosby, Texas

MONTHLY PROGRESS REPORT



Submitted to:

U.S. Environmental Protection Agency - Region 6
and
Texas Natural Resource Conservation Commission

July, 1994

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French Ltd. Project

FLTG, Inc.
Crosby, Texas

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French Ltd. Project

FLTG, Inc.

Crosby, Texas

MONTHLY PROGRESS REPORT

Submitted to:

U.S. Environmental Protection Agency - Region 6
and
Texas Natural Resource Conservation Commission

July, 1994

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Appendix A - None

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Samples dated July 5-29, 1994

Project I.D.	Date Received	Project I.D.	Date Received
M04A0016	7/05/94	S14A0084	7/20/94
S14A0080	7/06/94	S16B0016	7/20/94
S16B0013	7/06/94	S14A0087	7/22/94
M03A0246	7/07/94	S14A0086	7/25/94
M03A0247	7/07/94	M06C0017	7/27/94
S14A0081	7/07/94	M03A0251	7/28/94
M01E0290	7/13/94	S16B0017	7/28/94
S14A0085	7/18/94	S16B0018	7/28/94
S19E0004	7/18/94	S16B0019	7/28/94
M08C0005	7/19/94	M01D0044	7/29/94
M08D0007	7/19/94	M03A0252	7/29/94
M03A0250	7/20/94		

1.0 INTRODUCTION

This report covers the activities of FLTG, Inc. and the French Limited Project for July, 1994. FLTG, Inc. manages the project for the French Limited Task Group of Potentially Responsible Parties.

During July, 1994, the project team focused on the following activities and issues:

- Health, Safety, and Quality.
- Safety awareness.
- Contractor safety.
- HAZOP of daily work assignments.
- Hot, humid weather and heat stress.
- Detecting and correcting work place hazards.
- Response to changing site conditions.
- Safe lifting procedures.
- Slipping, tripping, and falling hazards.
- Safe work practices in congested conditions.
- Working around moving equipment.
- Treatment of Cell D/F water to meet effluent specifications.
- Backfill Cell F.
- Maintain DO, OUR, HMB, and plate count in Cell F.

- Re-vegetation of Cell E area.
- Operation and maintenance of the aquifer remediation system.
- In-situ aquifer bioremediation.
- Management of INT zone chlorinated plume to the southwest.
- Potable water well sampling and analyses.
- Response to potable water analytical results.
- Response to agency comments on DNAPL risk assessment and response options.
- Construction of INT-11 containment wall.
- Water treatment plant operation and maintenance.
- Metals analyses of treated water.
- Management of carbon blending system to minimize carbon consumption.
- Operation of the data base management system.
- Wetlands restoration design plan.
- Wetlands restoration site permitting.

This report includes:

- A summary of July activities, issues, and progress.
- Lagoon Demobilization activities, issues, and progress.
- Groundwater and Subsoil Remediation activities, issues, and progress.
- Groundwater Treatment Plant activities, issues, and progress.

- Ambient Air Management status.
- QA/QC status and data.
- Site management activities, issues, and progress.
- Wetlands restoration status.

2.0 SUMMARY

2.1 Summary of Activities and Progress

2.1.1 Health and Safety

There were no personal injury incidents.

All site workers earned the July safety bonus.

Conducted safety meetings and job inspections at the start of each shift; reviewed safety issues before starting all jobs.

All employees and contractors attended daily safety meetings.

Conducted daily mini-HAZOP of all specific jobs.

Supervision made 297 specific on-the-job safety contacts.

Emphasized slips, trips, and falls in congested work areas.

Reviewed the causes, symptoms, and treatment of heat stress each day.

Inspected and certified all fire extinguishers.

Inspected all contractor equipment before on-site use.

Inspected all vendor delivery trucks before site entry.

Emphasized the hazards and precautions associated with working around moving equipment.

Conducted 28 specific health and safety inspections.

Logged all safety issues each shift; less than 24-hour response to all safety issues.

Continued lottery ticket daily safety awareness incentive program; all regular site employees and regular contractors receive a Texas lottery ticket each day; tickets can be "lost" due to safety violations; employee response continues to be excellent.

Conducted personnel exposure monitoring, and all results were within acceptable levels. The most recent results are in Table 2-1.

Conducted Confined Space Entry training.

Completed semi-annual medical surveillance.

Updated employee training records.

2.1.2 Quality/QAQC/Data Base Management

The total quality process was used. The status of the goals is shown on Table 2-2. All goals were met except the lagoon dewater and the lagoon backfill goals.

Backfill was prevented on three days due to wet weather and on four days due to congested working conditions.

Raw data is being validated as per the plan.

The data base management system operated full on-line with no major problems or delays.

There were no data or reports rejected due to errors.

American Analytical continued to provide data on time.

Inconsistent Cu and Ag analyses were again received on the treated water; split samples were sent to two laboratories; the split results indicated a problem at the American Analytical Baton Rouge laboratory.

2.1.3 Lagoon Remediation

The three dredges and the workboat remain in Cell F.

Maintained a high level of biological activity in Cell D/F; OUR, HMB, and plate counts are high. Added O_2 to Cell F using a downdraft aerator.

Operated an aerator in Cell D to degrade biomass.

The Lefco unit treated and discharged about 3.3 million gallons of water; the Lefco units operated with only minor problems.

About 11,210 cubic yards of backfill were placed in Cell F.

Re-vegetated Cell E.

Tested floodwall gate closure.

2.1.4 Ambient Air Management

Ambient air quality was manually checked daily with portable analyzers, and no response action was required.

Time-integrated samples were collected in three work areas, and the results indicated no exposure; the data is shown in Table 2-1.

2.1.5 Aquifer Remediation

Monitored status of DNAPL plumes.

DNAPL flow to S1-12, S1-13 and S1-16 continues to be erratic.

DNAPL flow in S1-16 has remained low.

Operated direct drive pump on S1-16 well.

Rebuilt the drive shaft on the S1-16 pump.

Developing responses to EPA/TNRCC/CH2M Hill comments on DNAPL response options study.

Continued construction of INT-11 containment wall.

Continued routine S1 and INT oxygen and nutrient injection.

Increased INT zone pumping and injection rates.

Continued to evaluate ways to increase INT production and injection rates.

Operated vacuum-enhanced pumping systems for two INT wells.

Evaluating options to increase INT injection pressure in the southwest area.

Issued weekly well status and performance reports.

Inspected and adjusted all wells each day.

Continued daily maintenance of recovery and injection wells.

Completed monthly well measurements and sampling; TOC results show a steady decrease in concentration.

Maintained O_2 content of injection water at about 40-45 ppm.

Planted phreatofilic trees in Cell E area.

Continue pulse pumping in sections of the S1 zone South of Gulf Pump Road; the results continue to look positive; permanently shut off two more S1 production wells that meet the clean-up requirements.

Started a pulse pumping program in the INT zone.

Analytical results indicated low levels of chlorinated organics in one domestic potable well; bottled water is being provided to the affected household. The other domestic wells in the area were clean.

Collected ambient air samples at one local residence under specific conditions to determine inhalation risk. The inhalation risk was within acceptable levels.

2.1.6 Groundwater Treatment

The recurrence of elevated Cu and Ag in the effluent was due to laboratory procedures.

The carbon blending system operated with no problems.

The water treatment plant operated 98% of the time; the downtime was due to sand filter cleaning.

The water treatment plant effluent data is shown in Table 2-3.

TOC input to T-101 continued to decrease as the flows from the wells inside the floodwall decreased and as the TOC decreased from most wells.

The process operators collected all the process water and ground water samples.

2.1.7 Wetlands Restoration

Modified site general arrangement to accommodate adjacent property ownership.

Completed the draft restoration design.

Continued plant species identification and sourcing.

Developed final site access agreement between FLTG and Baytown.

Corp. of Engineers 404 permit was issues for public comment.

Reviewed the site selection process and the project plan with the Baytown City Council.

2.1.8 Site Management and Issues

Used the on-site laboratory to process all the operational control samples.

Reviewed lagoon and aquifer progress and plans in detail with EPA and TNRCC on a regular basis.

Continued equipment salvage and sales; several site visits were made by interested parties.

Reviewed project status and issues each day to ensure focus on critical issues - safety, quality and cost.

Issued weekly cost, schedule, and maintenance reports.

Reviewed progress on issues and action plans each week.

Reduced technical support MH's.

Tested the flood gate on one occasion.

Provided assistance and support for Barrett summer head-start program.

TABLE 2-1

Ambient Air Management
Time Integrated Exposure Data

Compound	PEL 8 hour PPM	M01D0044 20-Jul-94 GWT Operator		M01D0044 20-Jul-94 Rochem Oper.		M01D0043 22-Jun-94 Well Operator	
		% of PEL	PPM	% of PEL	PPM	% of PEL	PPM
Chloromethane	50	0.001	0.000	0.002	0.001	0.000	0.000
Bromomethane	5	0.000	0.000	0.000	0.000	0.000	0.000
Vinyl chloride	1	0.000	0.000	0.000	0.000	0.000	0.000
Chloroethane	1000	0.000	0.000	0.000	0.000	0.000	0.000
Dichloromethane	50	0.000	0.000	0.001	0.001	0.000	0.000
Acetone	750	0.001	0.005	0.002	0.013	0.000	0.000
Carbon disulfide	10	0.000	0.000	0.000	0.000	0.000	0.000
1,1-Dichloroethene	5	0.000	0.000	0.000	0.000	0.000	0.000
1,1-Dichloroethane	100	0.001	0.001	0.001	0.001	0.000	0.000
trans-1,2-Dichloroethe	200	0.000	0.000	0.000	0.000	0.000	0.000
Chloroform	10	0.010	0.001	0.000	0.000	0.000	0.000
1,2-Dichloroethane	10	0.003	0.000	0.000	0.000	0.000	0.000
2-Butanone	200	0.001	0.001	0.008	0.016	0.000	0.000
1,1,1-Trichloroethane	350	0.000	0.001	0.000	0.001	0.000	0.000
Carbon Tetrachloride	5	0.003	0.000	0.003	0.000	0.000	0.000
Vinyl acetate	10	0.000	0.000	0.000	0.000	0.000	0.000
Bromodichloromethane			0.000		0.000		0.000
1,2-Dichloropropane	75	0.000	0.000	0.000	0.000	0.000	0.000
cis-1,3-Dichloropropen	1	0.000	0.000	0.000	0.000	0.000	0.000
Trichloroethene	50	0.000	0.000	0.000	0.000	0.000	0.000
Dibromochloromethane			0.000		0.000		0.000
1,1,2-Trichloroethane	10	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	1	0.276	0.003	0.149	0.001	0.000	0.000
trans-1,3-Dichloroprop	1	0.000	0.000	0.000	0.000	0.000	0.000
2-Chloroethylvinyl ether			0.000		0.000		0.000
Bromoform	0.5	0.000	0.000	0.000	0.000	0.000	0.000
4-Methyl-2-pentanone	50	0.001	0.001	0.000	0.000	0.000	0.000
2-Hexanone	5	0.000	0.000	0.000	0.000	0.000	0.000
Tetrachloroethene	50	0.001	0.000	0.000	0.000	0.000	0.000
1,1,2,2-Tetrachloroet	1	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	100	0.007	0.007	0.002	0.002	0.000	0.000
Chlorobenzene	10	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	100	0.002	0.002	0.000	0.000	0.000	0.000
Styrene	50	0.001	0.000	0.000	0.000	0.000	0.000
Xylene (total)	100	0.004	0.004	0.000	0.000	0.000	0.000
Hexane			0.003		0.002		0.000

TABLE 2-2

Project Quality

Status as of 7/31/94		Goals	
Yes	1)	No OSHA recordable injuries.	
Attention	2)	100% compliance with all safety rules and procedures.	
Yes	3)	No citations for violations of applicable, relevant and appropriate regulations.	
Yes	4)	100% attendance (including subcontractors) at daily safety meetings.	
Yes/Attention	5)	Less than 24-hour response time on health and safety issues.	
Yes	6)	100% sign-in and security clearance.	
Yes	7)	No invalidation of reported data due to QA/QC issues.	
	8)	Spend less than:	MH/Month
Yes		• Direct hire	3,000
Yes		• FLTG management (5 people)	700
Yes/Attention		• Technical support (5 people)	900
Yes		• Maintenance support	120
Yes	9)	Pump at least 140 gpm; inject at least 100 gpm.	
Yes	10)	Remediate shallow alluvial zone aquifer in 60 months.	
Action	11)	Pump and treat 3.8 million gallons of lagoon water per month.	
Action	12)	Place 30,000 yds.^{3} of fill in the lagoon per month.	
Yes	13)	Hold analytical cost to less than $20,000 per month (1994 only).	
Yes	14)	No unscheduled overtime (per day or per week).	
Yes	15)	No agency contacts which require 3rd party resolution.	
Yes	16)	Documented training of site personnel for all work assignments.	
Yes	17)	Weekly audit of actual performance versus goals.	

TABLE 2-3
Treated Water Results Summary

Collected	Set No.	pH (6-9)		TSS 5 PPM		TOC 55 PPM		O&G 15 PPM		Benzene 150 PPB		Chlor HC's 500 PPB		Total PCBs 0.65 PPB		Napthalene 300 PPB	
		Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg
5-Apr-94	M03A0224	7.76		3.		38.9		.5		2.5		48.		.13		5.	
7-Apr-94	M03A0225	7.5		.5		35.6		2.5		2.5		465.		.13		5.	
11-Apr-94	M03A0226	7.48		5.		46.4		2.5		2.5		474.		.13		5.	
14-Apr-94	M03A0227	7.79		4.		14.		2.5		2.5		58.		.13		5.	
18-Apr-94	M03A0228	7.61		2.		50.9		2.5		2.5		633.		.16		5.	
21-Apr-94	M03A0229	7.62		4.		52.5		2.5		2.5		530.		.16		5.	
25-Apr-94	M03A0230	7.62		4.		56.3		2.5		2.5		584.		.16		5.	
28-Apr-94	M03A0231	7.62		.5		49.6		2.5		2.5		424.		.16		5.	
2-May-94	M03A0232	7.91		11.		27.9		2.5		2.5		350.		.16		5.	
5-May-94	M03A0233	7.77	7.66	5.	4.	55.	43.13	.5	2.28	2.5	2.5	518.	448.44	.16	.15	5.	5.
9-May-94	M03A0234	7.69	7.68	6.	4.61	51.6	44.91	2.5	2.28	2.5	2.5	31.	400.22	.16	.15	5.	5.
12-May-94	M03A0235	7.87	7.72	18.	6.06	49.1	45.21	2.5	2.28	2.5	2.5	800.	436.44	.16	.16	5.	5.
16-May-94	M03A0236	7.61	7.7	4.	6.06	29.1	46.89	2.5	2.28	2.5	2.5	350.	468.89	.16	.16	5.	5.
19-May-94	M03A0237	7.49	7.69	1.	5.94	44.3	46.16	2.5	2.28	2.5	2.5	421.	445.33	.16	.16	5.	5.
23-May-94	M03A0238	7.58	7.68	2.	5.72	42.3	45.02	2.5	2.28	6.	2.89	497.	441.67	.16	.16	5.	5.
27-May-94	M03A0239	7.3	7.65	4.	5.72	14.4	40.37	2.5	2.28	2.5	2.89	52.	382.56	.16	.16	5.	5.
30-May-94	M03A0240	7.54	7.64	8.	6.56	30.9	38.29	2.5	2.28	2.5	2.89	290.	367.67	.16	.16	5.	5.
2-Jun-94	M03A0241	7.72	7.62	1.	5.44	14.6	36.81	2.5	2.28	2.5	2.89	78.	337.44	.16	.16	5.	5.
6-Jun-94	M03A0242	7.6	7.6	1.	5.	26.5	33.64	2.5	2.5	2.5	2.89	474.	332.56	.16	.16	5.	5.
9-Jun-94	M03A0243	7.48	7.58	1.	4.44	39.1	32.26	2.5	2.5	6.	3.28	520.	386.89	.16	.16	5.	5.
13-Jun-94	M03A0244	7.64	7.55	7.	3.22	40.1	31.26	2.5	2.5	6.	3.67	602.	364.89	.16	.16	5.	5.
16-Jun-94	M03A0245	7.54	7.54	6.	3.44	20.9	30.34	2.5	2.5	2.5	3.67	440.	374.89	.16	.16	5.	5.
20-Jun-94	M03A0246	7.44	7.54	1.	3.44	36.7	29.5	2.5	2.5	6.	4.06	287.	360.	.16	.16	5.	5.
23-Jun-94	M03A0247	7.38	7.52	3.	3.56	37.9	29.01	2.5	2.5	6.	4.06	301.	338.22	.16	.16	5.	5.
27-Jun-94	M03A0248	7.36	7.52	5.	3.67	43.6	32.26	2.5	2.5	6.	4.44	401.	377.	.16	.16	5.	5.
30-Jun-94	M03A0249	7.43	7.51	4.	3.22	29.	32.04	2.5	2.5	2.5	4.44	108.	356.78	.16	.16	5.	5.
4-Jul-94	M03A0250	7.79	7.52	9.	4.11	21.4	32.8	2.5	2.5	6.	4.83	201.	370.44	.16	.16	5.	5.
7-Jul-94	M03A0251	7.47	7.5	9.	5.	30.1	33.2	2.5	2.5	2.5	4.83	181.	337.89	.16	.16	5.	5.
11-Jul-94	M03A0252	7.44	7.5	1.	5.	26.8	31.83	2.5	2.5	2.5	4.44	236.	306.33	.16	.16	5.	5.
14-Jul-94	M03A0253	7.28	7.46	1.	4.33	43.3	32.19	2.5	2.5	6.	4.44	223.	264.22	.16	.16	5.	5.
18-Jul-94	M03A0254	7.24	7.43	3.	4.	31.9	33.41	2.5	2.5	6.	4.83	348.	254.	.16	.16	5.	5.
21-Jul-94	M03A0255	7.27	7.41	1.	4.	43.6	34.18	2.5	2.5	6.	4.83	228.	247.44	.16	.16	5.	5.
25-Jul-94	M03A0256	7.27	7.39	7.	4.44	38.2	34.21	2.5	2.5	2.5	4.44	204.	236.67	.16	.16	5.	5.
28-Jul-94	M03A0257	7.31	7.39	4.	4.33	32.5	32.98	2.5	2.5	2.5	4.06	206.	215.	.16	.16	5.	5.
1-Aug-94	M03A0258																
4-Aug-94	M03A0259																
8-Aug-94	M03A0260																

Chlorinated hydrocarbons value is sum of detected concentrations of 21 volatile chlorinated hydrocarbons on target compound list.

TABLE 2-3 (Continued)
Treated Water Results Summary

Collected	Set No.	As 150 PPB		Ba 200 PPB		Cd 50 PPB		Cr 500 PPB		Cu 15 PPB		Pb 66 PPB		Mn 300 PPB		Hg 1 PPB		Ni 148 PPB		Se 20 PPB		Ag 5 PPB		Zn 162 PPB	
		Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg
5-Apr-94	M03A0224	15.		34.		1.6		5.3		13.3		3.8		24.2		.1		2.5		6.7		.3		28.6	
7-Apr-94	M03A0225	18.9		.5		.3		.9		7.7		6.3		25.4		.1		2.2		8.4		9.8		11.	
11-Apr-94	M03A0226	29.5		21.2		.4		1.		59.		4.		28.4		.1		11.3		1.3		.1		30.	
14-Apr-94	M03A0227	24.1		13.7		2.3		2.2		41.4		10.2		10.6		.1		13.		8.6		12.7		21.4	
18-Apr-94	M03A0228	18.		15.		1.6		4.3		22.3		1.5		27.1		.1		10.8		6.		10.4		24.6	
21-Apr-94	M03A0229	38.4		15.		3.2		6.7		27.2		1.5		35.7		.1		16.7		6.7		17.6		33.2	
25-Apr-94	M03A0230	11.		50.		1.5		2.5		13.		57.		21.		.1		7.		2.5		2.5		11.	
28-Apr-94	M03A0231	14.		50.		1.5		2.5		6.		.8		23.		.1		8.		2.5		2.5		2.5	
2-May-94	M03A0232	22.4		33.2		.4		3.		29.9		.8		26.5		.1		3.2		1.		5.7		19.6	
5-May-94	M03A0233	32.1	23.2	69.2	29.8	.8	1.3	2.8	2.9	8.8	23.9	1.5	9.3	96.7	32.7	.1	.1	4.5	8.5	2.	4.3	8.3	7.7	15.7	18.8
9-May-94	M03A0234	14.	22.6	50.	35.3	1.3	1.4	2.5	3.1	5.	23.6	.8	8.7	33.	33.6	.1	.1	5.	8.8	2.5	3.7	2.5	6.9	9.	18.6
12-May-94	M03A0235	15.	21.	33.	36.6	2.5	1.7	2.5	3.2	40.	21.5	1.	8.3	16.	32.2	.1	.1	6.	8.2	5.	4.1	5.	7.5	15.	16.9
16 May-94	M03A0236	14.6	19.9	43.5	39.9	.5	1.5	2.2	3.2	34.3	20.7	1.	7.3	26.5	33.9	.1	.1	4.5	7.3	1.	3.2	7.	6.8	13.2	16.
19-May-94	M03A0237	16.	19.7	5.	38.8	2.5	1.6	2.5	3.	30.	21.6	1.	7.3	24.	33.6	.1	.1	6.	6.8	2.5	2.9	6.	6.3	31.	16.7
23-May-94	M03A0238	17.	17.3	44.	42.	.5	1.3	.5	2.3	6.	19.2	1.	7.2	13.	31.1	.1	.1	2.5	5.2	1.	2.2	5.	4.9	7.	13.8
26-May-94	M03A0239	15.	17.8	39.	40.8	.5	1.2	.5	2.1	6.	18.4	1.	1.	9.	29.7	.1	.1	6.	5.1	1.	2.1	4.	5.1	6.	13.2
30-May-94	M03A0240	17.	18.1	37.	39.3	.4	1.	1.	1.9	4.	18.2	1.	1.	16.	29.	.1	.1	10.	5.3	1.	1.9	2.	5.1	3.	13.3
2-Jun-94	M03A0241	20.	17.9	29.	38.9	.5	1.1	1.	1.7	15.	16.6	2.	1.1	18.	28.	.1	.1	2.5	5.2	1.	1.9	2.	4.6	18.	13.1
6-Jun-94	M03A0242	11.	15.5	45.	36.2	.5	1.	8.	2.3	137.	30.8	1.	1.1	31.	20.7	.1	.1	6.	5.4	2.	1.9	10.	4.8	72.	19.4
9-Jun-94	M03A0243	15.	15.6	57.	36.9	.5	.9	2.	2.2	12.	31.6	2.	1.2	34.	20.8	.1	.1	12.	6.2	.3	1.6	3.	4.9	9.	19.4
13-Jun-94	M03A0244	11.	15.2	82.	42.4	.8	.7	13.	3.4	9.	28.1	1.	1.2	19.	21.2	.1	.1	12.	6.8	1.	1.2	3.8	4.8	14.	19.2
16-Jun-94	M03A0245	12.	14.9	94.	48.	1.	.8	1.	3.3	10.	25.4	1.	1.2	21.	20.6	.1	.1	12.	7.7	1.	1.2	3.	4.3	7.	18.6
20-Jun-94	M03A0246	9.7	14.2	116.	60.3	1.2	.7	.9	3.1	12.	23.4	1.	1.2	14.	19.4	.1	.1	10.	8.1	2.	1.1	2.8	4.	6.	15.8
23-Jun-94	M03A0247	14.	13.9	122.	69.	1.5	.8	.8	3.1	11.	24.	1.	1.2	21.	20.3	.1	.1	7.5	8.7	1.	1.1	2.5	3.7	11.	16.2
27-Jun-94	M03A0248	10.	13.3	121.	78.1	1.5	.9	9.	4.1	12.5	24.7	1.	1.2	18.	21.3	.1	.1	9.6	9.1	1.	1.1	3.6	3.6	16.	17.3
30-Jun-94	M03A0249	13.	12.9	108.	86.	1.5	1.	.3	4.	7.	25.1	1.	1.2	9.	20.6	.1	.1	8.	8.8	1.	1.1	3.	3.7	5.	17.6
4-Jul-94	M03A0250	16.	12.4	68.5	90.4	.2	1.	.3	3.9	3.5	23.8	.5	1.1	9.6	19.6	.1	.1	3.1	8.9	1.	1.1	2.6	3.8	12.	16.9
7-Jul-94	M03A0251	14.9	12.8	104.	96.9	.3	.9	.8	3.1	11.	9.8	1.	1.1	20.	18.4	.1	.1	5.	8.8	1.	1.	3.	3.	10.	10.
11-Jul-94	M03A0252	10.	12.3	110.	102.8	.5	.9	.5	3.	5.	9.	1.5	1.	10.	15.7	.1	.1	4.	7.9	1.5	1.2	3.	3.	10.	10.1
14-Jul-94	M03A0253	18.	13.1	105.	105.4	.3	.9	.3	1.5	6.	8.7	.8	1.	7.	14.4	.1	.1	4.5	7.1	.8	1.1	1.5	2.8	17.	10.4
18-Jul-94	M03A0254	10.	12.8	60.	101.6	.5	.8	.5	1.5	4.	8.	1.5	1.	10.	13.2	.1	.1	2.	6.	1.5	1.2	2.	2.7	10.	10.8
21-Jul-94	M03A0255	10.	12.9	100.	99.8	.5	.7	.5	1.4	6.	7.3	1.5	1.1	7.	12.4	.1	.1	7.	5.6	1.5	1.1	1.	2.5	10.	11.2
25-Jul-94	M03A0256	8.	12.2	110.	98.5	.3	.6	.3	1.4	3.	6.4	.8	1.1	6.	10.7	.1	.1	6.	5.5	2.	1.3	.5	2.2	6.	10.7
28-Jul-94	M03A0257	13.	12.5	64.	92.2	.3	.5	.6	.4	15.	6.7	.8	1.	29.	12.	.1	.1	6.	5.1	2.	1.4	.5	1.9	8.	9.8
1-Aug-94	M03A0258																								
4-Aug-94	M03A0259																								
8-Aug-94	M03A0260																								

Metals values in PPB.

2.2 Problem Areas and Recommended Solutions

Problem	Solution
Maintain high level of safety awareness.	Continue daily lottery ticket program. Daily safety meetings. Supervisory safety contacts.
On-the-Job safety attention.	Contact all employees at least twice per day on safety issues. Review job details as work proceeds.
Hazard detection and response.	Safety inspections. HAZOP's on all jobs.
DNAPL migration in S1-16 and S1-13 area.	Maintain active pumping in S1-16 and S1-13 area to control DNAPL gradient; sheet pile wall has retarded migration.
Response action plan for DNAPL and DNAPL affected areas.	Respond to EPA comments on the endangerment assessment and response action plan. Install containment wall around INT-11 area. Evaluate other containment actions.
Low flow in some pumping and injection wells.	Test vacuum enhanced pumping. Increase injection pressure in some areas.
INT zone plume in southwest area.	Monitor regularly. Evaluate gradient control options. Develop response action plan.
Affected potable water at RD-2.	Provide bottled water for drinking and cooking. Tested inhalation exposure during bathing. Develop long-term options.

Aquifer compliance criteria.	Continued discussions of approaches.
Rebound of chemicals in S1 zone on west end.	Continued pulse pumping test in this zone.
Increase INT zone remediation rate.	Implement pulse pump plan.
Wetlands project permits.	Applied for Corp. of Engineers 404 permit.
Elevated Cu and Ag in water plant effluent.	Send split samples to two laboratories; define error in laboratory procedures.

2.3 Problems Resolved

Problem	Solution
Wetlands site selection.	Formal agency approval of Brownwood.
Cell D/F water treatment.	pH control and regular cleaning of reverse osmosis units.

2.4 Deliverables Submitted

June, 1994 Monthly Report.

2.5 Upcoming/Ongoing Events and Activities

Daily safety meetings and inspections.

Lottery ticket safety awareness program.

Regular emphasis on heat stress.

Respond to HAZOP audits.

Increase INT injection pressure.

Install vacuum-enhanced INT pumping on INT-2, INT-3, and INT-4.

Daily well pump checks and maintenance.

Pulse pumping in INT zone.

Pulse pumping in S1 zone.

Operate S1 and INT wells for expedited in-situ bioremediation.

Sample potable wells in Riverdale.

Provide bottled water to specific homes in Riverdale.

Develop gradient control options for Riverdale area.

Dismantle and decontaminate lagoon equipment.

Continue dewater and backfill of Cell F.

Hydroseed Cell E with Bermuda grass in bare areas.

Operate Data Base Management System.

Decontaminate scrap steel and pipe and put in the bottom of Cell F.

Total Quality process.

Continue biological activity monitoring in S1 wells and INT wells.

Install INT-11 area containment wall.

Develop aquifer compliance criteria.

Continue QA/QC data confirmation.

Operate secondary water collection and handling system.

Optimize carbon usage in Water Treatment Plant.

Develop lagoon closure plan.

Continue wetlands restoration project.

2.6 Key Staffing Changes

None.

2.7 Percent Complete

Research & Development	- 98%
Facilities	- 100%
Slough	- 100%
Subsoil Investigation	-100%
Floodwall	-100%
Lagoon Remediation	-100%
Groundwater	- 62%
Lagoon Dewatering/Fixation	- 80%
Water Treatment	- 58%
Wetlands	- 32%
Demobilization	- 55%
Monitoring	- 44%

2.8 Schedule

All deliverables are on schedule.

Complete active aquifer remediation by January 1, 1996.

2.9 Operations and Monitoring Data

The operations and monitoring data are submitted as parts of Sections 3.0, 4.0, 5.0, and 6.0 of this report and are stored in secure storage at the French project office.

2.10 Credits Accrued/Applied

Status of Credits

	Accrued this period	Accrued to date	Applied this period	Applied to date	Running total
December 1990	34	34	0	0	34
December 1991	0	100	0	0	100
December 1992	0	101	0	2	99
January 1993	0	101	0	2	99
February 1993	0	101	0	2	99
March 1993	0	101	0	2	99
April 1993	0	101	0	2	99
May 1993	0	101	0	2	99
June 1993	0	101	0	2	99
July 1993	0	101	2	4	97
August 1993	2	103	0	4	99
September 1993	0	103	0	4	99
October 1993	0	103	0	4	99
November 1993	1	104	0	4	100
December 1993	0	104	0	4	100
January 1994	0	104	0	4	100
February 1994	0	104	0	4	100
March 1994	0	104	0	4	100
April 1994	0	104	0	4	100
May 1994	0	104	0	4	100
June 1994	0	104	0	4	100
July 1994	5	109	0	4	105

2.11 Community Relations

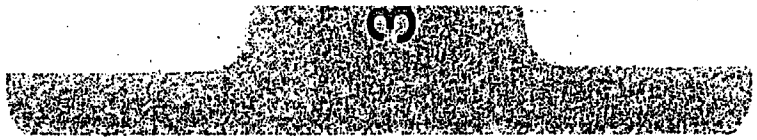
Maintained 24-hour, call-in Hot Line.

Conducted five site tours for interested parties.

Reviewed site status with Barrett Civic League.

Contacted nearby local residents with update on site operation.

Contacted several Riverdale residents with water quality data.



3.0 LAGOON BIOREMEDIATION

3.1 Summary of Activities

Re-vegetated Cell E with Bermuda grass.

The dredges and workboat remain in Cell F.

Completed dismantling Cell E/F divider wall and pipe rack.

Continued to dewater and backfill Cell F; pumped and treated 3.3 million gallons and placed 11,210 yards of backfill.

Treated about 10-15 gpm of Cell D water through the FLTG water treatment plant.

Maintained DO, OUR, and HMB in Cell F to reduce the biomass.

Operated aerator in Cell D to expedite biomass degradation.

3.2 Problems and Response Action

Problem	Recommended Solution
Ground cover growth slow in Cell E.	Hydroseed once with Bermuda.
Final elevation of lagoon area.	Grade to tie into north and east sloughs.

3.3 Problems Resolved

None.

3.4 Deliverables Submitted

None.

3.5 Upcoming Events and Activities

Maintain pH, DO, OUR, and nutrient levels in Cell F and in Cell D.

Operate aerator/mixer in Cell F and in Cell D.

Continue to dewater and backfill Cell F.

Continue to dewater Cell D.

Re-hydroseed Cell E if required.

Maintain trees in Cell E.

Dismantle and remove the dredges and workboat from the lagoon.

4.0 GROUNDWATER AND SUBSOIL REMEDIATION

4.1 Summary of Activities

4.1.1 Operation of Production and Injection Well Systems

Operation of the production and injection wells systems during July 1994 is summarized in Table 4-1. Flows from the production well system are summarized in Table 4-2 and Figure 4-1. Flows into the injection well system are summarized in Table 4-3 and Figure 4-2. Individual well flows are summarized in Table 4-4. There were no well additions or changes in July.

4.1.2 Operational Monitoring

Operational monitoring associated with the groundwater and subsoil remediation system during July 1994 is summarized in Table 4-5.

4.1.3 Data Management and Evaluation

Operational monitoring data from the groundwater and subsoil remediation system for this reporting period were entered into FLTG's database. Tables and figures for this section of the Monthly Progress Report were generated from this database.

4.2 Problems and Response Actions

The groundwater production and injection rates were both above target; six S1 production wells (S1-23, -33, -35, -38, 42, and -43) are off line following successful pulse pumping results; nine S1 production wells (S1-34, -36, -37, -44, -45, -46, -47, -48, and -60) are being pulse pumped on a bi-weekly cycle (see Section 4.3.2 and Table 4-4). However, certain wells continue to show low flows. Due to backfilling and runoff control in the former lagoon area, groundwater levels there are declining steadily. This has resulted in reduced flows at production wells inside the floodwall, notably well S1-5, which is now out of service. Flows are also reducing at S1-9 and -11.

A program of vacuum-enhanced pumping (VEP) at wells INT-1 and -22 was started in July. This successfully increased flow rates 20-40%, from 0.37 gpm to 0.45 gpm at INT-22, and from 1.03 gpm to 1.45 gpm at INT-1. Additional wells in the INT western plume area will be converted to the VEP system in early August.

Table 4-1

Groundwater System Operation - July 1994 *Reporting Period: June 28 - July 27 (30 days)*
Production System
No. of production wells: 109 (S1 unit, 53; INT unit, 56) No. of operational wells: 99 (S1 unit, 45; INT unit, 54)
Changes in system since last month: started VEP at INT-1 and INT-22
No. of wells off line having reached criteria: 6 (see Tables 4-4 and 4-7) Other wells off line: S1-5, low water levels; S1-16, DNAPL pump down; INT-11 and -19, sheetpile wall construction; well S1-13 is running but unmetered due to DNAPL No. of wells on pulse pumping schedule: 9 (see Table 4-4) No. of wells pumping DNAPL: 0
Groundwater produced: 7.1 M gal; 199.2 M gal since startup based on main meter Total production rate: avg. 165 gpm (target 140 gpm); range 127 - 190 gpm S1 production rate: avg. 102 gpm; avg. 2.3 gpm per well INT production rate: avg. 62.5 gpm; avg. 1.2 gpm per well Total flow rate apportioned between S1 and INT units based on individual well meter readings
TOC (non-volatile) concentration avg. 102 ppm; range 59 - 202 ppm TOC mass removed: 6,743 lb. (338,161 lb. since startup); 225 lb./day
Injection System
No. of injection wells: 59 (S1 unit, 17; INT unit, 42); all operational
Rainfall during period: 0.55"
Changes in system since last month: none
Groundwater injected: 4.9 M gal (96.9 M gal since startup) based on main meters Percentage of injected water recycled from RO plant: ~50%
S1 unit injected: 2.0 M gal (54.4 M gal since startup) INT unit injected: 2.9 M gal (42.5 M gal since startup) Total injection rate: avg. 114 gpm (target 100 gpm); range 95 - 122 gpm S1 injection rate: avg. 47 gpm; avg. 2.8 gpm per well INT injection rate: avg. 67 gpm; avg. 1.6 gpm per well Total flow rate apportioned between S1 and INT units based on individual well meter readings
Oxygen added to injection water: 9,210 lb.; 307 lb./day used (input efficiency = 16%) Avg. DO in injection water: S1, 36.6 ppm; INT, 35.3 ppm (target 40 ppm) ⇒ 49 lb./day
Volume of 4.7% w/w KNO_3 nutrient solution added to INT unit, S1-58, and S1-59: 12,916 gal Nutrient flow rate: 431 gpd, 0.36% of INT + S1-North inflow rate (target 0.38%) Calculated injection water NO_3 concentration: 46.7 mg/L-N (target 50 mg/L-N) Average injection water NO3 concentration (April 14 through 28): 39.4 mg/L-N (sampled 6/30, 7/7, 7/14)

Note that average monthly flow rates at individual wells (calculated from weekly individual well flow meter readings) are not used directly to determine S1 and INT unit inflows and outflows, but are used to apportion total production and injection flows (calculated from daily main production and injection meter readings) between S1 and INT units.

Table 4-2

Daily Groundwater Production and TOC Removal
July 1994

Date	Project Day	T-101 Outflow Rate (FQ-101A) (gpd)	T-101 Outflow Rate (gpm)	T-101 Influent Ave. TOC (mg/L)	T-101 Influent TOC Loading (kg/day)
28-Jun	902	272,900	190	89	92
29-Jun	903	253,100	176	87	83
30-Jun	904	242,200	168	126	116
1-Jul	905	222,800	155	79	66
2-Jul	906	271,800	189	90	92
3-Jul	907	253,800	176	150	144
4-Jul	908	258,800	180	98	96
5-Jul	909	204,800	142	212	164
6-Jul	910	258,800	180	134	132
7-Jul	911	234,700	163	132	117
8-Jul	912	232,800	162	102	90
9-Jul	913	232,800	162	117	103
10-Jul	914	234,700	163	86	76
11-Jul	915	232,800	162	95	84
12-Jul	916	260,200	181	65	64
13-Jul	917	251,500	175	63	60
14-Jul	918	248,700	173	121	114
15-Jul	919	249,900	174	103	98
16-Jul	920	236,500	164	151	135
17-Jul	921	250,000	174	97	92
18-Jul	922	238,300	165	87	79
19-Jul	923	233,000	162	167	147
20-Jul	924	226,900	158	182	156
21-Jul	925	214,500	149	72	59
22-Jul	926	224,100	156	98	83
23-Jul	927	233,500	162	228	202
24-Jul	928	228,900	159	85	74
25-Jul	929	209,800	146	106	84
26-Jul	930	182,800	127	92	63
27-Jul	931	237,600	165	110	99
Month Average		237,767	165	114	102
Month Total		7,133,000			3,065

Table 4-3

Daily Injection Flows
July 1994

Date	Project Day	INT South INT-90/100 S1 North Injection Wells FQ905 - FQ909		INT North (not INT-90/100) Injection Wells Meter FQ-906		S1 South Injection Wells Meter FQ-909		Total Injection Rate	
		(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)
28-Jun	902	62,300	43	46,100	32	61,500	43	169,900	118
29-Jun	903	60,600	42	45,800	32	51,700	36	158,100	110
30-Jun	904	62,300	43	46,200	32	49,300	34	157,800	110
1-Jul	905	68,400	48	48,100	33	50,200	35	166,700	116
2-Jul	906	63,200	44	48,400	34	54,500	38	166,100	115
3-Jul	907	56,500	39	48,000	33	59,100	41	163,600	114
4-Jul	908	56,100	39	47,500	33	59,300	41	162,900	113
5-Jul	909	70,200	49	35,900	25	46,100	32	152,200	106
6-Jul	910	76,700	53	41,600	29	58,000	40	176,300	122
7-Jul	911	66,600	46	42,700	30	66,900	46	176,200	122
8-Jul	912	60,600	42	40,600	28	71,100	49	172,300	120
9-Jul	913	60,200	42	37,400	26	70,300	49	167,900	117
10-Jul	914	61,200	43	37,600	26	71,700	50	170,500	118
11-Jul	915	60,300	42	36,000	25	71,500	50	167,800	117
12-Jul	916	59,700	41	35,300	25	70,800	49	165,800	115
13-Jul	917	57,800	40	35,100	24	68,800	48	161,700	112
14-Jul	918	57,400	40	35,700	25	68,700	48	161,800	112
15-Jul	919	56,800	39	35,500	25	68,800	48	161,100	112
16-Jul	920	57,000	40	35,100	24	66,800	46	158,900	110
17-Jul	921	57,500	40	35,100	24	68,000	47	160,600	112
18-Jul	922	57,300	40	37,200	26	67,800	47	162,300	113
19-Jul	923	55,300	38	38,000	26	66,100	46	159,400	111
20-Jul	924	47,900	33	33,700	23	55,800	39	137,400	95
21-Jul	925	58,400	41	39,000	27	67,800	47	165,200	115
22-Jul	926	59,000	41	43,200	30	66,200	46	168,400	117
23-Jul	927	53,500	37	42,900	30	75,100	52	171,500	119
24-Jul	928	52,400	36	41,600	29	73,600	51	167,600	116
25-Jul	929	52,900	37	41,500	29	72,600	50	167,000	116
26-Jul	930	53,700	37	41,100	29	71,300	50	166,100	115
27-Jul	931	54,300	38	42,300	29	73,100	51	169,700	118
Month Average		59,203	41	40,473	28	64,750	45	164,427	114
Month Total		1,776,100		1,214,200		1,942,500		4,932,800	

Table 4-4

Individual Well Flows
July 1994

S1 Production Wells (53)

Well ID	gpm
S1-1	1.3
S1-2	0.5
S1-3	0.4
S1-4	0.1
S1-5	OFF*
S1-6	1.7
S1-7	0.6
S1-8	0.4
S1-9	0.5
S1-10	1.4
S1-11	0.7
S1-12	0.1
S1-13	NM
S1-14	0.4
S1-15	1.0
S1-16	OFF
S1-17	1.0
S1-18	1.3
S1-19	3.2
S1-20	0.4
S1-21	6.4
S1-22	8.5
S1-23	OFF
S1-24	6.1
S1-25	1.7
S1-26	4.5
S1-27	0.8
S1-28	2.3
S1-29	0.3
S1-30	3.3
S1-31	3.0
S1-32	3.1
S1-33	OFF
S1-34	2.3 PP
S1-35	OFF
S1-36	4.0 PP
S1-37	3.8 PP
S1-38	OFF
S1-39	8.1
S1-40	5.1
S1-41	7.0
S1-42	OFF
S1-43	OFF
S1-44	5.5 PP
S1-45	3.0 PP
S1-46	6.9 PP
S1-47	2.0 PP
S1-48	1.1 PP
S1-60	2.1 PP
S1-61	0.1
S1-62	0.4
S1-63	1.5
S1-64	1.0
Total	110.0
Average*	2.5

* of metered wells

S1 Injection Wells (17)

Well ID	gpm
S1-49	2.4
S1-50	3.7
S1-51	1.4
S1-52	2.5
S1-53	4.2
S1-54	4.9
S1-55	2.2
S1-56	5.8
S1-57	3.0
S1-58	1.9
S1-59	2.8
S1-65	2.2
S1-66	2.4
S1-67	2.2
S1-68	1.9
S1-69	2.0
S1-70	1.9
Total	47.3
Average	2.8

Wells S1-58, 59, 65, 66, 67, 68, 69, and 70 receive oxygen- and nutrient-amended injection water

All other S1 wells receive oxygenated injection water only

Notes
OFF - well inoperative
OFF* -production stopped due to low water levels
NM - well running but not metered
PP - well in pulse pumping mode

INT Production Wells (56)

Well ID	gpm
INT-1	0.8
INT-2	0.4
INT-3	0.1
INT-4	0.2
INT-5	0.8
INT-6	0.1
INT-7	0.2
INT-8	0.9
INT-9	0.6
INT-10	1.6
INT-11	OFF
INT-12	1.1
INT-13	0.3
INT-14	0.2
INT-15	0.6
INT-16	0.2
INT-17	0.1
INT-18	0.6
INT-19	OFF
INT-20	0.1
INT-21	0.3
INT-22	0.4
INT-23	0.1
INT-24	0.5
INT-25	0.4
INT-26	0.4
INT-27	1.6
INT-28	0.5
INT-29	3.2
INT-30	1.0
INT-31	1.3
INT-32	0.9
INT-33	0.2
INT-55	2.9
INT-56	0.3
INT-57	1.0
INT-58	2.5
INT-59	0.2
INT-60	1.9
INT-61	0.6
INT-62	0.3
INT-65	1.3
INT-66	0.6
INT-205	1.1
INT-206	2.1
INT-207	1.2
INT-208	2.5
INT-209	0.2
INT-210	2.4
INT-211	2.7
INT-212	7.5
INT-213	2.1
INT-214	3.4
INT-215	5.0
INT-216	1.2
INT-217	4.3
Total	67.1
Average	1.2

INT Injection Wells (42)

Well ID	gpm
INT-63	3.0
INT-64	0.8
INT-71	2.5
INT-72	2.0
INT-73	1.2
INT-74	1.2
INT-75	2.0
INT-76	2.8
INT-77	2.5
INT-78	2.3
INT-79	0.8
INT-80	1.8
INT-81	0.8
INT-82	1.2
INT-83	1.3
INT-84	4.5
INT-85	1.2
INT-86	1.3
INT-87	1.0
INT-88	1.0
INT-89	0.6
INT-90	2.8
INT-91	1.4
INT-92	1.8
INT-93	1.3
INT-94	1.3
INT-95	1.6
INT-96	0.6
INT-97	1.4
INT-98	3.2
INT-99	2.8
INT-100	0.2
INT-201	1.6
INT-202	0.5
INT-203	1.2
INT-204	1.1
INT-218	1.9
INT-219	2.1
INT-220	1.1
INT-221	0.8
INT-222	1.1
INT-223	1.7
Total	67.9
Average	1.6

All INT injection wells receive oxygen- and nutrient-amended injection water

Note: total and average flow rates for S1 and INT units are corrected (per main flow meter readings) for use in Table 4-1.

Table 4-5

Operational Monitoring - July 1994

Activity	Frequency	Purpose
Check production and injection wells for pump, meter, and level control operation, injection pressure, gas buildup, and flow meter readings.	Daily	Identify and respond to individual well problems; maintain operating efficiency.
Read groundwater treatment plant inflow and outflow meters; nutrient injection flow meters; oxygen flows, pressure and temperature; and injection header back pressure.	Daily (shift changes)	Identify and respond to treatment plant problems; control nutrient and injection flow rates.
Measure T-101 influent and effluent TOC concentrations.	Daily (shift changes)	Track removal of TOC.
Measure rainfall.	Daily	Assists interpretation of water level maps.
Sample for nutrients (K, NO_3) at three locations on injection headers.	Weekly	Check on nutrient injection rate.
Measure dissolved oxygen at 11 representative S1 and INT injection wells	Weekly	Main control for oxygen injection rate.
Sample T-101 influent for VOC, TOC, and nutrient analysis, (1) from all operating production wells, and (2) from all wells located outside the floodwall.	Monthly	Develop chemical mass balance.
Sample Rochem effluent for VOC analysis.	Monthly	Confirm that treated water is suitable for blending with injection water.
Monitor groundwater levels at all monitoring wells.	Monthly	Verify capture zones.
Monitor groundwater levels at INT west area monitoring wells.	Weekly	Verify capture zone in proposed INT pulse pumping area.
Monitor in-situ DO at all monitoring wells.	Monthly	Monitor breakthrough of aerobic conditions.
Sample groundwater at all production wells for on-site TOC and DO analysis.	Monthly	Track TOC removal and monitor breakthrough of aerobic conditions.

Figure 4-1

Production Flows

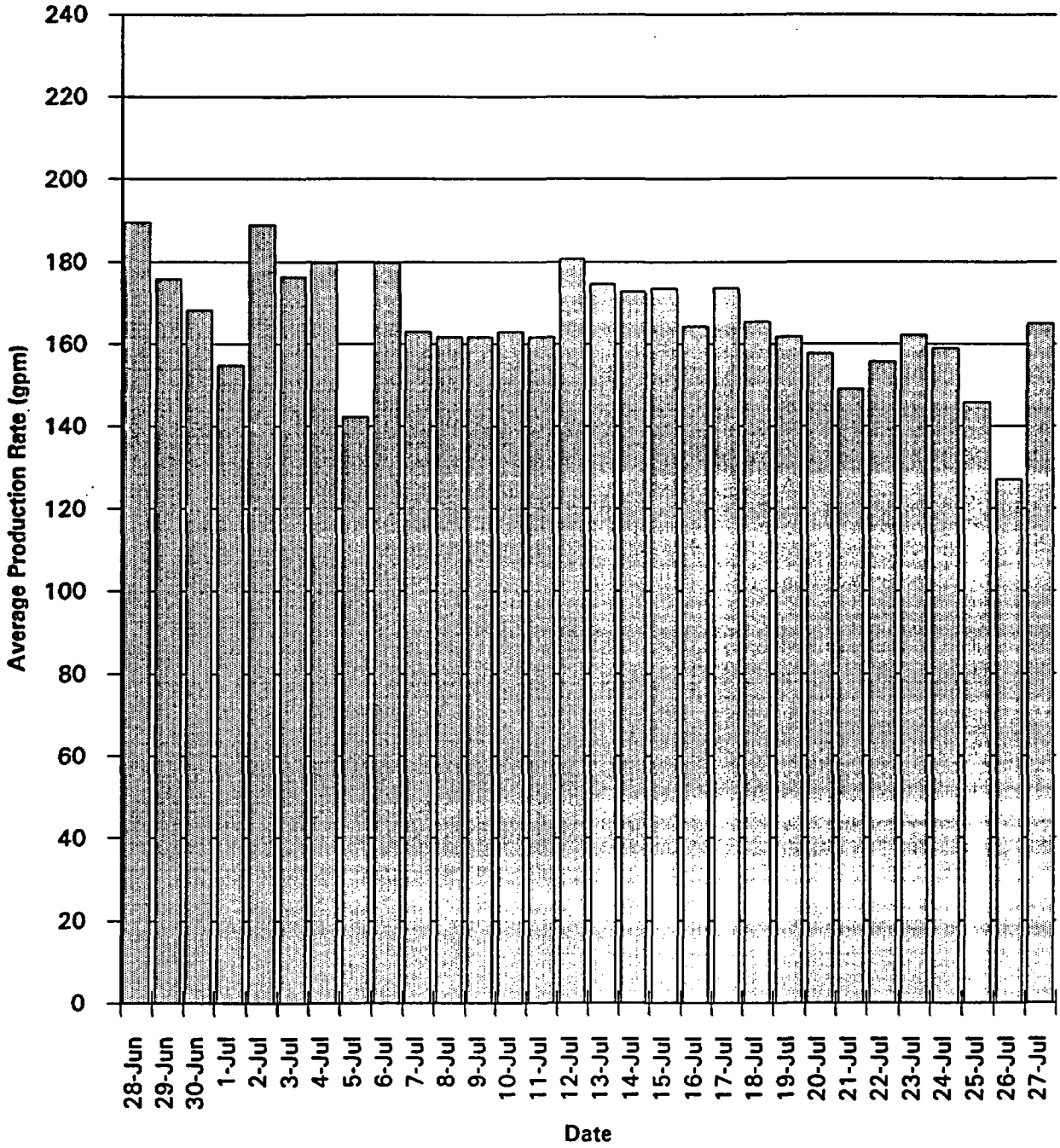
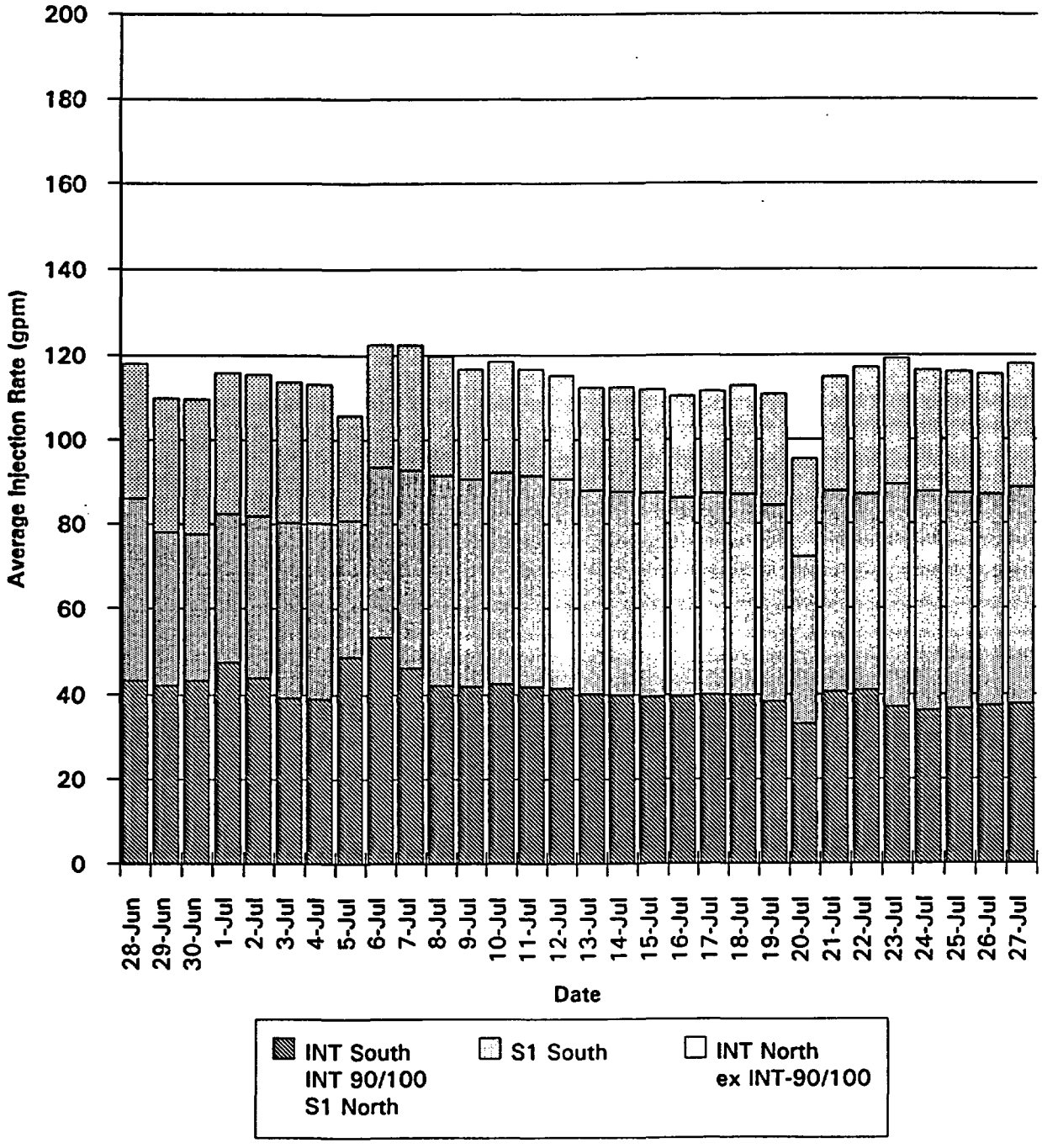


Figure 4-2

Injection Flows



Nutrient and dissolved oxygen concentrations in injection water were both at or close to target levels. No special response action is planned. A TV inspection was performed at well INT-19, following surface damage to that well during installation of the INT-11 area sheetpile cutoff wall (see Section 4.3.1). The inspection indicated that the well screen and casing were in good condition and that only surface rebuilding would be required.

4.3 Pending Issues

4.3.1 DNAPL RI/FS

EPA's comments on the Feasibility Study Report were received on July 8; responses are being prepared. Work continued on installation of the steel sheetpile cutoff wall for the INT-11 DNAPL area. Elevations of the perforations for the SW Bell cable were surveyed on July 20 and are above the S1/UNC water table. Elevations for the south side of the wall were calculated; the bottom of the wall in this area is approximately 10 feet below the C2 clay contact, which is substantially deeper than required.

4.3.2 S1 Unit Pulse Pumping

Samples collected from wells S1-34, -36, and -37 on June 27 essentially met cleanup criteria. S1-34 contained 8 ppb of methylene chloride, which is a likely lab artifact. S1-37 contained 6 ppb of benzene. These three wells were turned off and tagged out on July 18. Confirmation sampling is planned for September. Pulse pumping continued in the eastern part of the S1 plume, at wells S1-44 through -60. Water-level recovery monitoring was performed at pulse-pumped wells; water levels re-equilibrated rapidly during the off cycle. Historic and planned future pulse pumping activities are shown in Table 4-6.

4.3.3 INT Unit Pulse Pumping

A program of pulse pumping western area INT production wells was started on July 25. Groundwater levels are being monitored in this area on a weekly basis to confirm the western capture zone during pulse pumping operations. Historic and planned future pulse pumping activities are shown in Table 4-6.

Table 4-6

S1 UNIT PULSE PUMPING PROGRAM

	S1-35, 43		Sampling	Results
1/1/94	ON		Sampled during bounceback test (Sept - Dec 1993)	No bounceback
1/17/94	OFF			
	S1-23, 38, 42	S1-33, 34, 36, 37	Sampling	Results
1/3/94	ON	ON	No Sampling	
1/10/94	ON	ON	No Sampling	
1/17/94	ON	ON	No Sampling	
1/24/94	OFF	OFF	Water levels only	
1/31/94	ON	ON	No Sampling	
2/7/94	ON	OFF	No Sampling	
2/14/94	OFF	ON	S1-33, 34, 36, & 37	Met criteria
2/21/94	ON	OFF	S1-23, 38, & 42	Met criteria
2/28/94	OFF	ON	No Sampling	
3/7/94	ON	OFF	No Sampling	
3/14/94	OFF	OFF	No Sampling	
3/21/94	OFF	ON	S1-33, 34, 36, & 37	Met criteria
3/28/94	ON	OFF	S1-23, 38, & 42	Met criteria
4/4//94	OFF	ON	No Sampling	
4/11/94	ON	OFF	No Sampling	
4/18/94	OFF	ON	S1-33, 34, 36, & 37	Only S1-33 met criteria
4/25/94	ON	OFF	S1-23, 38, & 42	Met criteria
5/2/94	OFF	ON	No Sampling	
5/9/94	ON	OFF	No Sampling	
5/16/94	OFF - finish pulse pumping at all 3 wells	ON (except S1-33)	No Sampling	Finish pulse pumping at S1-33

Table 4-6 (Continued)
S1 UNIT PULSE PUMPING PROGRAM (CONTINUED)

Date	S1-46, 47, 48, 60	S1-34, 36, 37, 44, 45	Sampling	Results
5/18/94	OFF (46 ON)	OFF	No Sampling	
5/23/94	ON (46 OFF)	OFF	No Sampling	
5/30/94	OFF (46 ON)	ON	No Sampling	
6/6/94	ON	OFF	No Sampling	
6/13/94	OFF	ON	No Sampling	
6/20/94	ON	OFF	No Sampling	
6/27/94	OFF	ON	S1-34, 36, & 37	Met criteria
7/4/94	ON	OFF	No Sampling	
7/11/94	OFF	ON	No Sampling	
7/18/94	ON	OFF	No Sampling	
7/4/94	OFF	ON	No Sampling	
7/11/94	ON	OFF	No Sampling	
Date	**S1-46, 47, 48, 60**	**S1-44, 45**	**Sampling**	**Results**
7/18/94	OFF	ON	No Sampling	
7/25/94	ON	OFF	No Sampling	
8/1/94	OFF	ON	No Sampling	
8/8/94	ON	OFF	No Sampling	
8/15/94	OFF	ON	No Sampling	
7/25/94	ON	OFF	No Sampling	
8/1/94	OFF	ON	No Sampling	
8/8/94	ON	OFF	No Sampling	
8/15/94	OFF	ON	No Sampling	

INT UNIT PULSE PUMPING PROGRAM

Date	North Group INT-212, 205, 206, 207, 208	South Group INT-216, 209, 210, 217, 211
7/25/94	ON (START)	OFF
8/1/94	OFF	ON
8/8/94	ON	OFF
8/15/94	OFF	ON
8/22/94	ON	OFF
8/29/94	OFF	ON
9/5/94	ON	OFF
9/12/94	OFF	ON
9/19/94	ON	OFF

4.3.4 INT Unit - Western Plume

Air sampling was performed on July 7, as part of a site-specific risk evaluation for vapor inhalation during showering in groundwater from well RD-2. Low concentrations of VOCs were detected both in ambient air and in shower vapor. Risk evaluation using maximum detected concentrations and the most conservative assumptions indicated that the risk caused by vapor inhalation during showering was about 5×10^{-7}.

4.3.5 Phreatophyte Planting

Ten specimens each of cypress and river birch were planted within the floodwall in July. If these thirsty trees develop tap roots to the water table, they are expected to transpire significant amounts of groundwater. This is believed to be the first use of phreatophytes at a Superfund site as part of an engineered passive dewatering system. If successful, it will enhance the sheetpile wall containment system. The tree's growth and health will be monitored to determine whether they will progress under site soil and climatic conditions.

4.4 Operational Refinements

Vacuum-enhance pumping (VEP) was introduced at INT-1 and INT-22. Initial results were promising, with a 20 to 40% increase in flow rates; further VEP conversions will be performed in August.

4.5 Data Summary and Discussion

4.5.1 Groundwater Production and Injection

Groundwater production and injection rates continued above target.

4.5.2 Groundwater Levels and Flow Directions

Water level readings for the S1 and INT units were measured on July 3-4. Regional groundwater elevation contours for the S1 and INT units in the groundwater remediation area are presented in Figures 4-3 and 4-4. The current extent of contaminated groundwater is contained within the S1 and INT extraction system capture zones.

4.5.3 TOC in shallow groundwater

Samples were collected from 99 out of 109 production wells on July 1 for on-site TOC analysis. Summaries of TOC concentrations from the start of remediation to date for each unit are presented in Tables 4-7 and 4-8. TOC contour maps are presented in Figures 4-5 and 4-6. The history of daily flows, TOC concentration, and TOC input to T-101 is presented in Table 4-2. On-site TOC analyses (used to generate Tables 4-2, 4-7, and 4-8) measure non-purgeable organic carbon.

4.5.4 In-Situ Bioremediation

No major changes in in-situ bioremediation system operation occurred in July. The emphasis continues to be to maximize delivery of oxygen and nutrients to the INT system. Dissolved oxygen (DO) monitoring was performed at monitoring and injection wells on July 1-4. In July, no new DO breakthrough areas developed (see Figures 4-7 and 4-8). At S1-105, a drop in DO from >15 ppm in June to 1.6 ppm in July indicates the increase in biological oxygen demand that is anticipated following DO breakthrough; the resulting rapid growth in aerobic bioactivity leads to oxygen consumption temporarily exceeding oxygen delivery rates.

4.6 Schedule

In August: the INT-11 DNAPL cutoff wall will be completed; permeability certification testing will be performed; further VEP conversions at INT production wells will be performed; June 1994 quarterly groundwater monitoring results will be evaluated.

Table 4-7

HISTORY OF TOC CONCENTRATIONS
AT S1 PRODUCTION WELLS

Well ID	Baseline Nov-Dec 91 (ppm)	Maximum Feb-Dec 92 (ppm)	Maximum 1,993 (ppm)	Average 1,993 (ppm)	Minimum 1,993 (ppm)	Jan 1,994 (ppm)	Feb 1,994 (ppm)	Mar 1,994 (ppm)	Apr 1,994 (ppm)	May 1,994 (ppm)	June 1,994 (ppm)	July 1,994 (ppm)
S1-1	290	476	910	634	390	1,025	1,150	1,317	941	971	1,360	970
S1-2	190	796	1,204	832	460	1,037	909	1,510	882	1,120	1,139	1,100
S1-3	370	1,071	1,610	862	384	1,090	1,120	1,037	793	783	755	760
S1-4	47	866	1,044	786	560	848	1,300	1,025	676	669	668	420
S1-5	51	646	950	714	548	1,079	624	1,161	655	583	473	NS
S1-6	51	800	1,084	816	482	1,202	1,340	1,315	832	878	892	920
S1-7	200	787	1,084	879	710	NS	1,290	1,327	857	843	786	780
S1-8	64	927	1,072	769	465	1,118	1,290	1,516	921	931	1,110	880
S1-9	77	506	1,530	830	225	1,809	2,020	2,085	1,500	337	1,589	1,420
S1-10	46	214	2,105	1,381	147	2,251	2,610	2,540	1,716	1,980	1,800	1,810
S1-11	120	281	1,848	1,193	270	2,004	2,210	NS	1,500	1,609	1,751	1,810
S1-12	140	1,002	2,260	1,200	585	2,313	2,390	2,129	1,780	2,056	1,445	2,410
S1-13	520	894	760	598	404	771	930	990	698	836	722	850
S1-14	590	1,730	2,304	1,214	626	1,502	1,077	1,616	1,350	1,293	1,443	1,400
S1-15	5,300	4,910	3,696	2,374	336	3,373	2,756	2,778	3,030	2,484	2,280	3,490
S1-16	8,800	8,900	3,122	1,651	180	NS	2,056	2,732	2,256	NS	718	NS
S1-17	6,800	5,550	1,106	750	405	627	388	344	314	266	180	230
S1-18	2,200	2,043	196	112	52	90	101	44	86	39	34	36
S1-19	20	914	220	110	53	26	37	33	60	25	28	28
S1-20	120	1,360	192	126	60	25	95	141	67	68	50	47
S1-21	65	418	1,020	134	23	113	48	17	29	18	8	19
S1-22	290	1,080	1,010	123	8	12	6	4	28	14	19	16
S1-23	350	234	1,315	137	7	24	14	27	29	13	21	NS
S1-24	250	240	200	52	16	25	16	16	39	16	18	19
S1-25	550	660	91	35	11	26	16	16	28	14	15	15
S1-26	540	575	84	34	14	25	25	22	39	15	18	17
S1-27	220	219	400	119	52	51	62	60	52	45	42	41
S1-28	370	520	380	64	11	275	29	12	23	14	15	17
S1-29	670	496	182	47	16	50	62	23	28	19	20	23
S1-30	370	711	604	113	27	51	50	78	38	28	31	32
S1-31	14	712	70	34	15	0	57	29	60	15	17	20
S1-32	18	347	910	185	30	100	132	85	82	48	49	46
S1-33	10	30	55	30	12	101	99	16	25	NS	NS	NS
S1-34	11	50	94	50	24	79	90	75	24	NS	13	17
S1-35	24	154	95	68	22	25	43	45	64	44	43	19
S1-36	200	162	106	56	10	60	49	44	45	NS	27	30
S1-37	13	71	180	44	12	50	52	55	57	NS	8	23
S1-38	59	73	52	21	1	NS	1,540	6	17	NS	NS	NS
S1-39	290	414	96	35	17	15	25	22	21	14	11	14
S1-40	150	210	268	70	25	38	25	33	25	18	15	16
S1-41	170	116	84	31	14	1	48	12	17	12	11	11
S1-42	88	103	35	17	5	0	11	37	13	NS	NS	NS
S1-43	4	36	50	24	6	1	21	NS	19	NS	NS	5
S1-44	280	204	45	25	9	25	19	44	33	23	21	23
S1-45	4,400	588	174	51	14	37	20	30	33	26	NS	17
S1-46	480	462	76	18	4	1	11	10	21	15	NS	34
S1-47	1,200	1,390	155	79	25	150	72	61	60	42	NS	25
S1-48	1,200	1,505	133	52	15	50	34	31	31	21	NS	35
S1-60	48	91	126	28	8	25	11	15	16	10	NS	10
S1-61	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	758	744
S1-62	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	125	42
S1-63	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	264	256
S1-64	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	512	102

NS = Not Sampled

Table 4-8

HISTORY OF TOC CONCENTRATIONS
AT INT PRODUCTION WELLS

Well ID	Baseline Nov-Dec 91 (ppm)	Maximum Feb-Dec 92 (ppm)	Maximum 1,993 (ppm)	Average 1,993 (ppm)	Minimum 1,993 (ppm)	Jan 1,994 (ppm)	Feb 1,994 (ppm)	Mar 1,994 (ppm)	Apr 1,994 (ppm)	May 1,994 (ppm)	June 1,994 (ppm)	July 1,994 (ppm)
INT-1	3,600	3,600	1,584	1,029	460	1,050	718	800	608	507	374	376
INT-2	1,800	1,120	900	414	215	174	230	290	301	343	339	602
INT-3	5,200	2,030	1,935	1,389	216	2,060	1,926	1,188	1,362	1,058	1,260	1,548
INT-4	610	928	793	526	330	587	1,300	1,300	990	892	541	594
INT-5	960	1,689	536	356	190	263	248	205	159	94	101	92
INT-6	280	973	1,140	556	90	720	451	510	312	210	200	135
INT-7	100	245	1,100	308	24	99	74	99	104	117	140	147
INT-8	75	666	196	90	24	112	103	84	87	62	60	56
INT-9	800	1,413	358	178	101	188	174	142	105	78	77	68
INT-10	1,900	1,328	186	109	57	100	93	112	96	65	62	NS
INT-11	590	1,816	171	117	80	175	186	NS	85	11	44	NS
INT-12	3,300	1,820	1,255	399	141	364	239	106	123	66	105	65
INT-13	590	924	251	122	40	99	67	63	50	47	89	50
INT-14	24	1,026	492	266	58	226	154	112	162	62	NS	61
INT-15	19	1,760	38	20	9	12	34	20	19	14	19	13
INT-16	2,000	2,230	147	28	6	13	12	15	13	9	11	7
INT-17	7	252	184	81	39	152	25	13	15	12	NS	9
INT-18	4	129	270	183	139	225	230	162	137	76	73	64
INT-19	1,400	1,800	332	158	52	112	76	55	55	43	36	NS
INT-20	3,500	3,742	3,141	2,123	901	2,147	1,960	2,525	1,844	2,112	1,922	1,930
INT-21	29	301	325	260	130	362	327	240	217	214	214	356
INT-22	8	68	76	45	18	43	58	55	32	41	44	85
INT-23	16	74	112	73	43	48	53	40	32	26	50	241
INT-24	240	434	472	293	38	202	174	136	111	85	89	95
INT-25	36	376	272	169	58	75	60	65	62	32	24	30
INT-26	120	970	837	430	143	203	173	152	131	113	38	111
INT-27	180	324	268	196	107	75	109	116	104	82	85	NS
INT-28	630	648	288	200	57	187	80	48	51	53	34	38
INT-29	1,100	1,120	450	245	74	162	130	104	58	78	65	83
INT-30	1,400	606	294	129	43	112	60	32	28	22	32	26
INT-31	70	540	120	62	29	12	67	52	41	32	25	30
INT-32	880	470	208	119	48	124	26	16	29	20	24	23
INT-33	120	1,710	1,620	910	25	1,374	1,006	255	109	61	47	38
INT-55	NS	NS	53	53	53	235	113	115	76	147	98	141
INT-56	NS	NS	668	668	668	901	824	925	153	515	435	350
INT-57	NS	NS	28	28	28	12	29	40	24	58	61	74
INT-58	NS	NS	102	102	102	10	94	76	67	54	46	44
INT-59	NS	NS	121	121	121	100	104	115	81	50	77	45
INT-60	NS	NS	172	172	172	201	169	195	151	124	118	114
INT-61	NS	NS	56	56	56	79	80	95	54	59	48	43
INT-62	NS	NS	52	52	52	75	197	100	65	36	38	30
INT-65	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	65	116
INT-66	NS	NS	114	114	114	125	132	175	161	97	113	66
INT-205	NS	NS	31	31	31	39	132	120	50	34	39	40
INT-206	NS	NS	24	24	24	218	48	44	45	38	53	75
INT-207	NS	NS	66	66	66	101	71	56	58	38	52	47
INT-208	NS	NS	27	27	27	19	53	20	24	16	38	19
INT-209	NS	NS	35	35	35	40	62	52	51	50	43	46
INT-210	NS	NS	36	36	36	42	48	24	29	25	22	72
INT-211	NS	NS	109	109	109	151	127	88	89	55	57	53
INT-212	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	36	24
INT-213	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	36	135
INT-214	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	35	68
INT-215	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	170	174
INT-216	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	22	21
INT-217	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	62	61

NS = Not Sampled

Figure 4-3

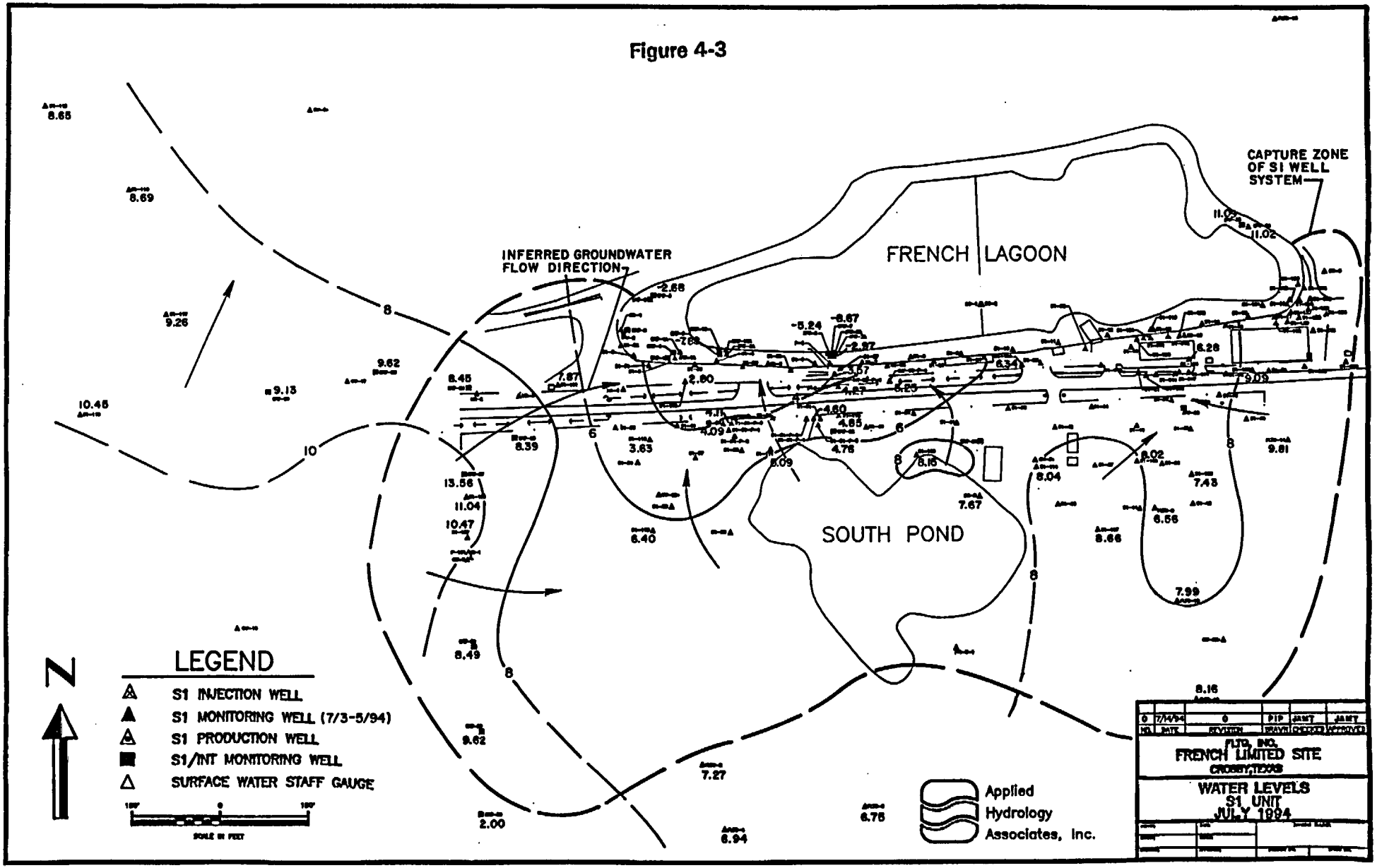
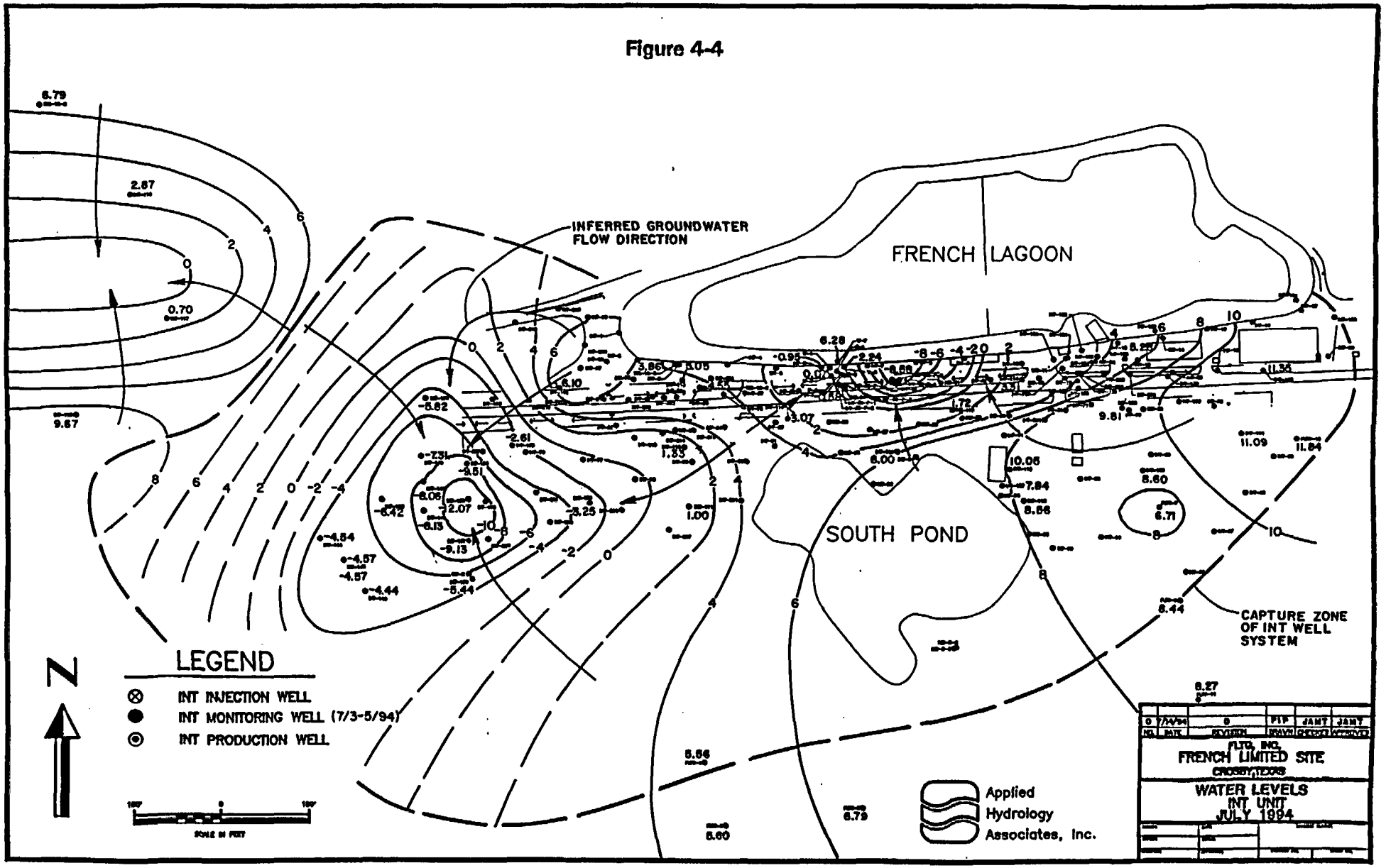

CAPTURE ZONE OF S1 WELL SYSTEM
INFERRED GROUNDWATER FLOW DIRECTION
FRENCH LAGOON
SOUTH POND
LEGEND
S1 INJECTION WELL
S1 MONITORING WELL (7/3-5/94)
S1 PRODUCTION WELL
S1/INT MONITORING WELL
SURFACE WATER STAFF GAUGE
N
Applied Hydrology Associates, Inc.
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
WATER LEVELS
S1 UNIT
JULY 1994

Figure 4-4


INFERRED GROUNDWATER FLOW DIRECTION
FRENCH LAGOON
SOUTH POND
CAPTURE ZONE OF INT WELL SYSTEM
LEGEND
INT INJECTION WELL
INT MONITORING WELL (7/3-5/94)
INT PRODUCTION WELL
N
Applied Hydrology Associates, Inc.
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
WATER LEVELS
INT UNIT
JULY 1994

053950

Figure 4-5

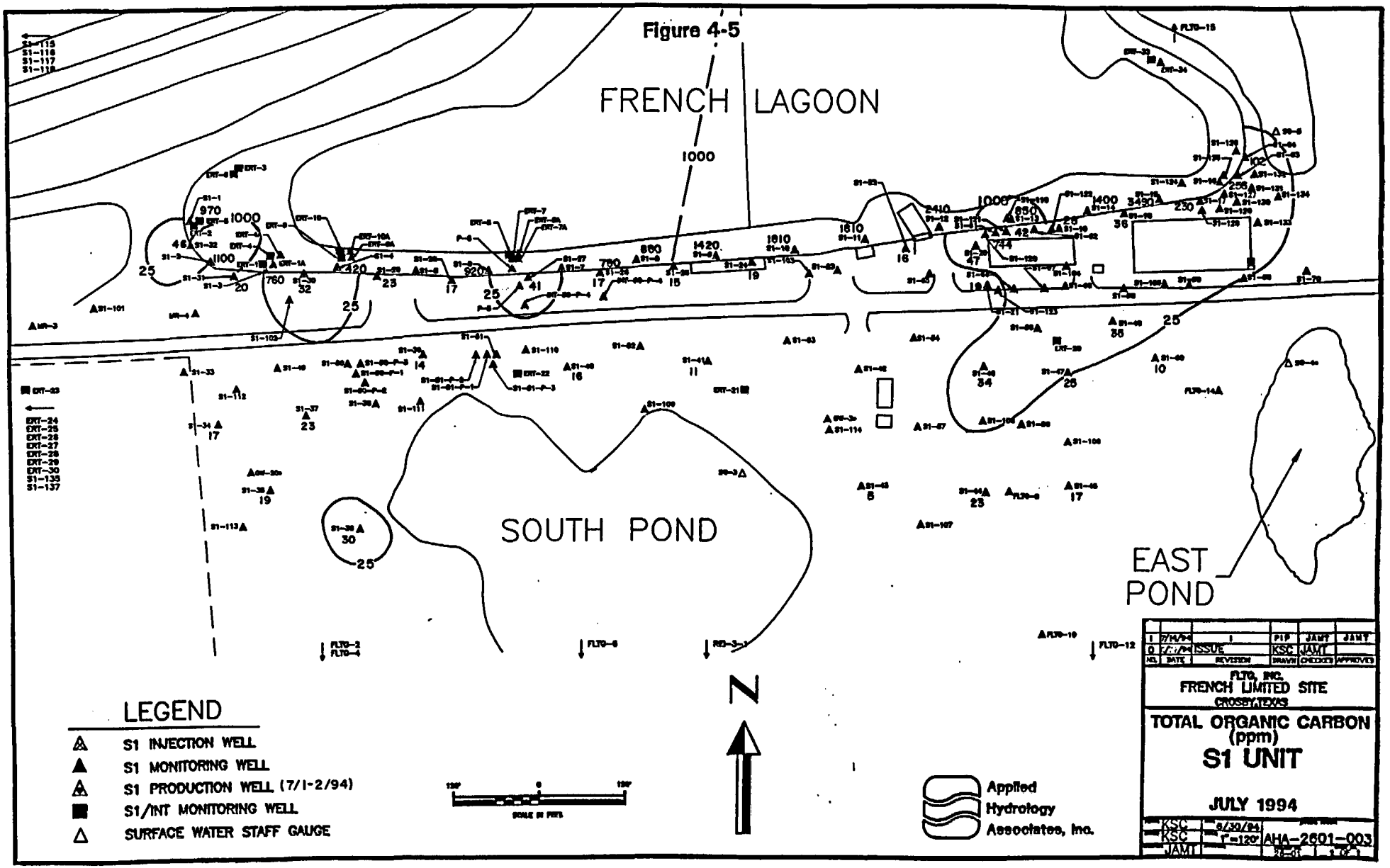


Figure 4-6

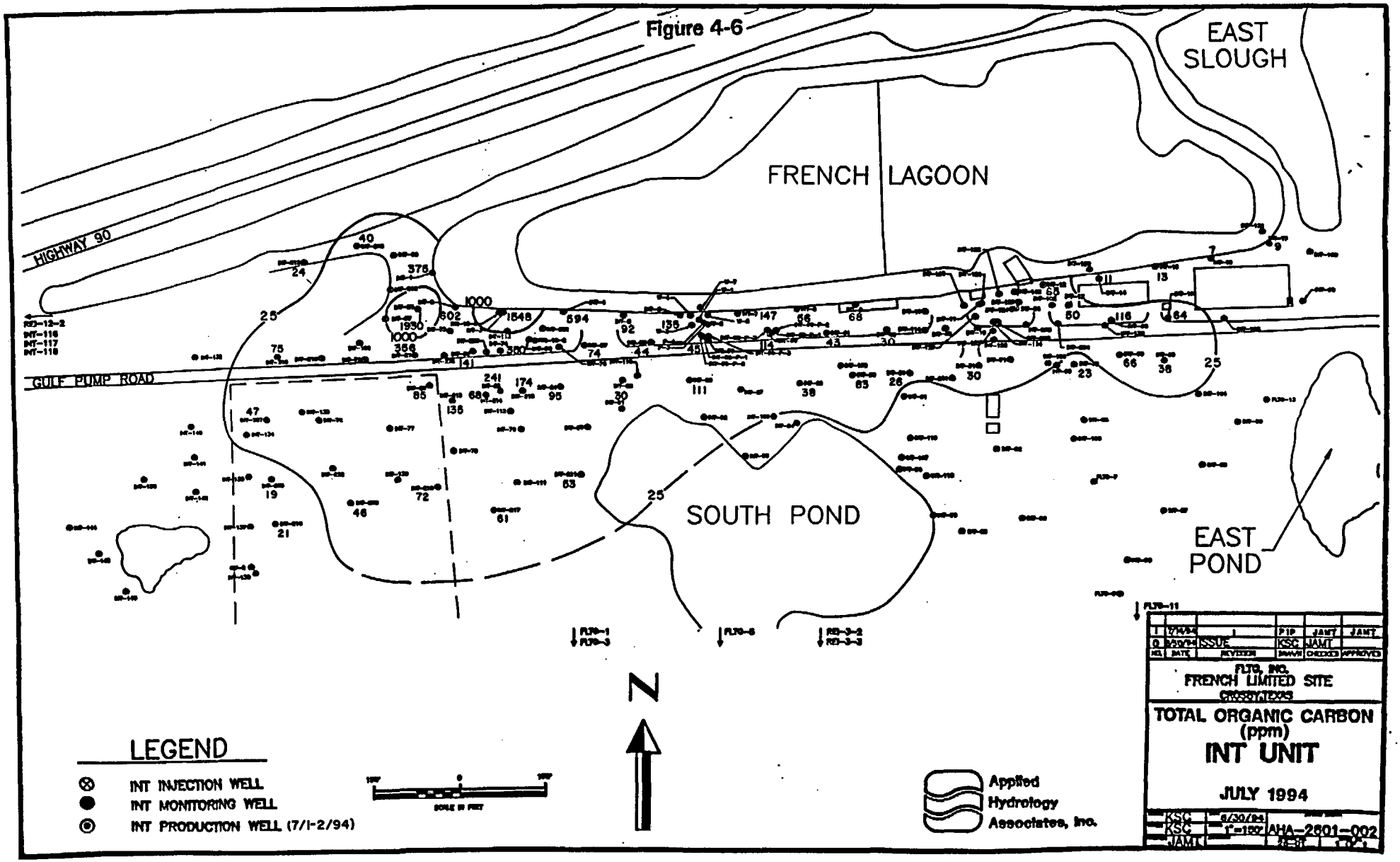

EAST SLOUGH
FRENCH LAGOON
HIGHWAY 90
GULF PUMP ROAD
SOUTH POND
EAST POND
LEGEND
INT INJECTION WELL
INT MONITORING WELL
INT PRODUCTION WELL (7/1-2/94)
N
Applied Hydrology Associates, Inc.
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
TOTAL ORGANIC CARBON (ppm)
INT UNIT
JULY 1994
AHA-2601-002

Figure 4-7

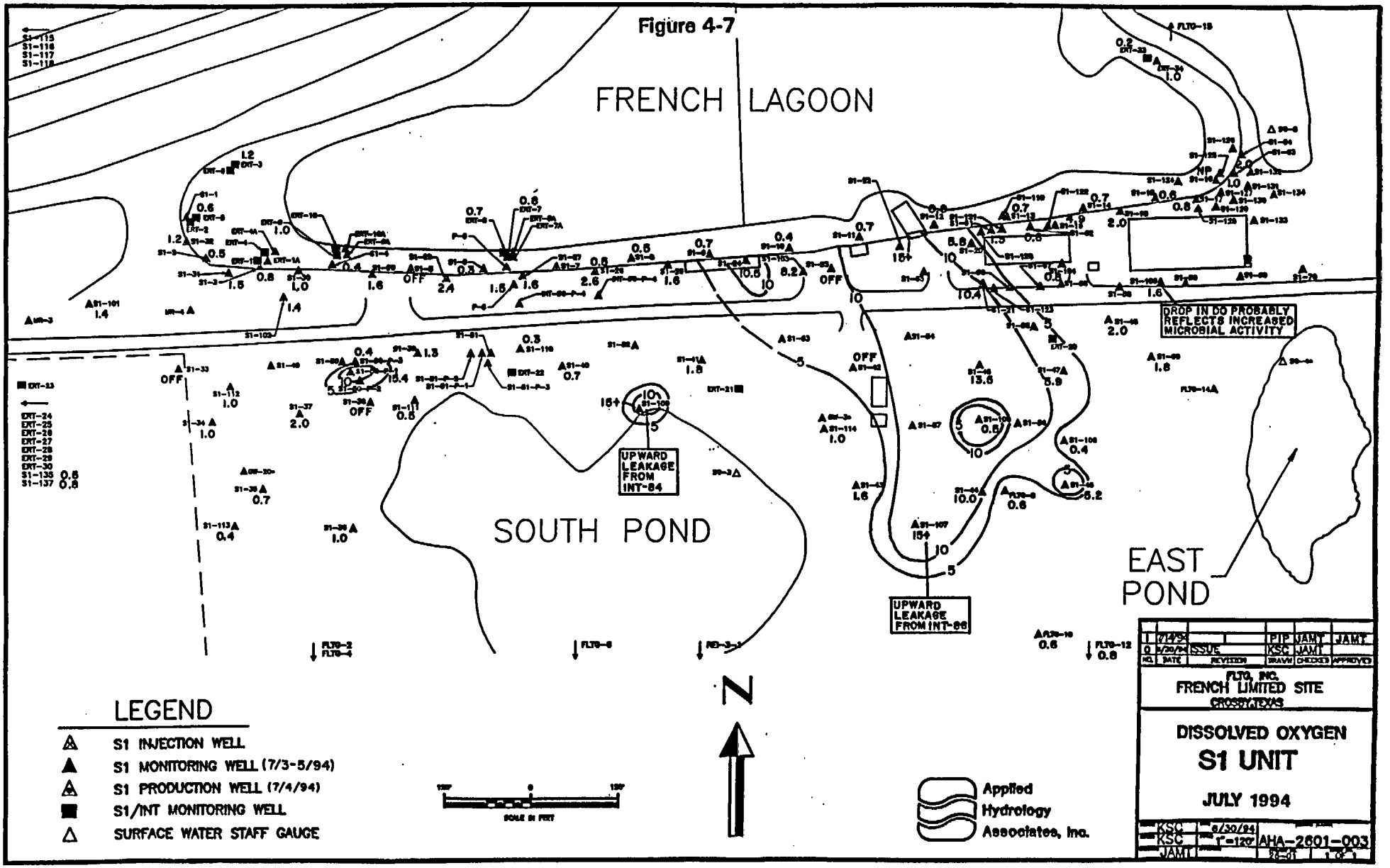
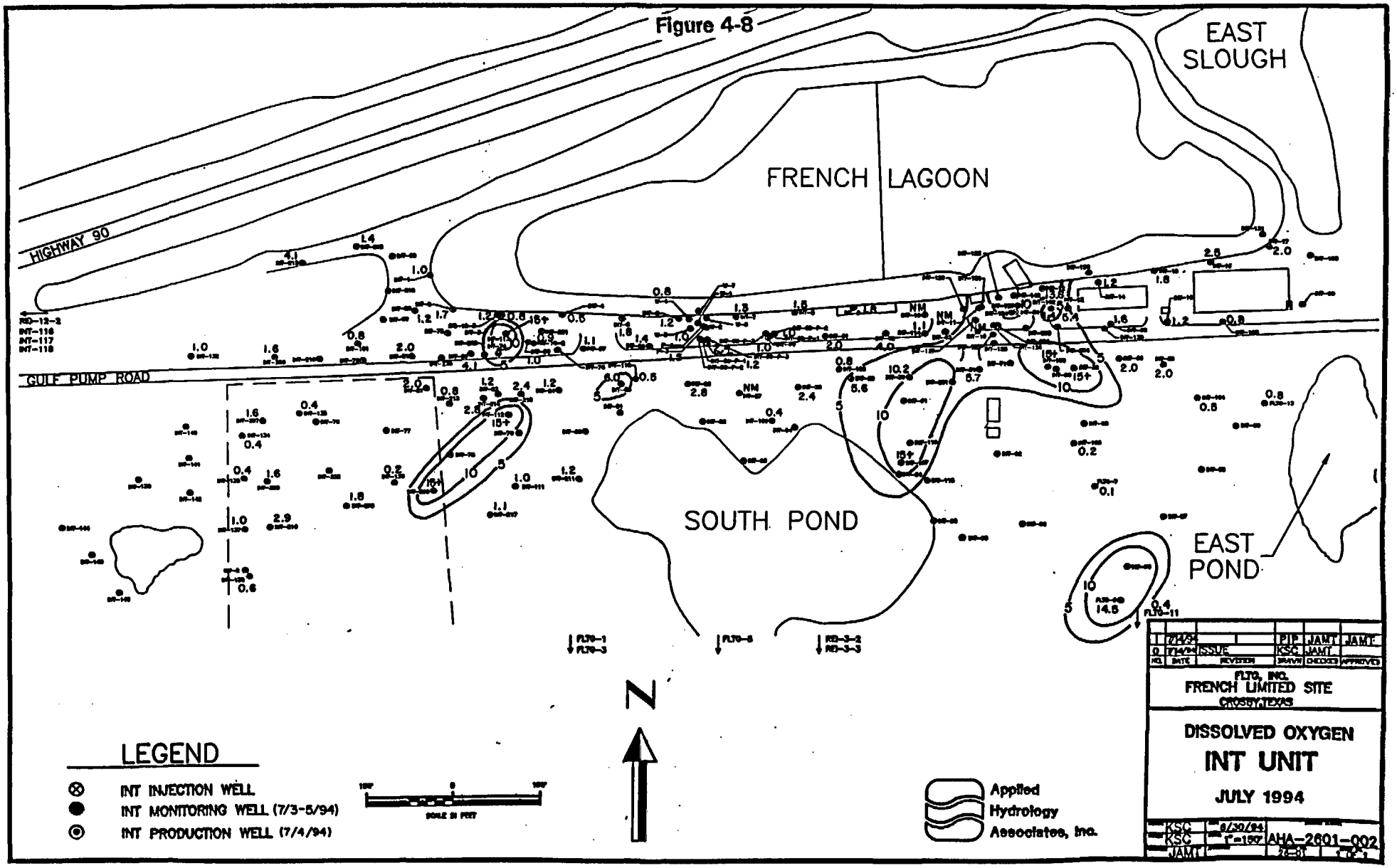

FRENCH LAGOON
SOUTH POND
EAST POND
UPWARD LEAKAGE FROM INT-84
UPWARD LEAKAGE FROM INT-86
DROP IN DO PROBABLY REFLECTS INCREASED MICROBIAL ACTIVITY
LEGEND
S1 INJECTION WELL
S1 MONITORING WELL (7/3-5/94)
S1 PRODUCTION WELL (7/4/94)
S1/INT MONITORING WELL
SURFACE WATER STAFF GAUGE
N
SCALE IN FEET
Applied Hydrology Associates, Inc.
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
DISSOLVED OXYGEN
S1 UNIT
JULY 1994
AHA-2601-003

Figure 4-8


EAST SLOUGH
FRENCH LAGOON
HIGHWAY 90
GULF PUMP ROAD
SOUTH POND
EAST POND
N
LEGEND
INT INJECTION WELL
INT MONITORING WELL (7/3-5/94)
INT PRODUCTION WELL (7/4/94)
Applied Hydrology Associates, Inc.
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
DISSOLVED OXYGEN
INT UNIT
JULY 1994
AHA-2601-002

5.0 GROUNDWATER TREATMENT PLANT

5.1 Summary of Activities

As reported in June, the next carbon transfer scheduled was to use reactivated carbon. On July 1, the transfer was completed using the new product.

Due to a quality problem, the vendor had to replace the product two days later. Until Calgon identified the source of the excessive fines, Virgin 400 was used as the replacement. A successful transfer was conducted on July 26th using the reactivated carbon, and the efficiency is being evaluated at this time.

Operation is continuing to blend water passed through the carbon filter at a 50% rate. Additional lagoon water from Cell D has been treated through the water treatment plant. Approximately 200,000 gallons at TOC values of over 3,100 mg/L has curtailed the valve from opening further in the auto position.

Other issues for the month of July have been a power surge and voltage fluctuation that single-phased an air compressor motor which had to be rewound and controls had to be replaced.

Reduction of speed on the bioreactor blowers to produce 490 scfm from 600 have been beneficial to both the blower maintenance/heat problems and aided in the reduction of turbulence in the reactors that had caused media to degrade. This reduction has not affected the dissolved oxygen levels in the bioreactors.

A sand filter, F-2, is scheduled for take-down and cleaning the first of August. Inspection of the internals is needed to locate the source of septic sand condition within the feed plenum.

There have been no other major mechanical failures in the GWT plant in July.

Treated Water Results Summary Table 5-2 reflects data through July 28 .

Total flows for July:

Water discharged to the San Jacinto River - 7,573,890 gallons

Water discharged to the Lagoon - 0

Sludge discharged to the Lagoon - 74,145 gallons

Water processed through the GWT - 7,179,500 gallons

Water discharged to the South Pond - 0

Water processed from Cell F to GWT by Rochem - 3,316,900 gallons (included in Attachment 5A)

Water blended passed Carbon Filter - 2,328,000 gallons

Water processed from Cell D to GWT plant - 218,700 gallons

5.2 Inoculum/Nutrient Addition

The following have been introduced into the bioreactors/clarifier:

Nutrients:

395 gallons Diammonium Phosphate

Microbes:

16 oz. French Limited Isolated Microbes

Coagulant:

17 gallons Percol 778 Cationic Polymer

5.3 Maintenance

Table 5-1 lists the preventive maintenance items performed in July.

5.4 Operating Data

Table 5-2 summarizes the laboratory analysis of the treated water discharged to the San Jacinto River.

TABLE 5-1

Preventive Maintenance

Day	Action
July 1	Carbon transfer
July 7	Electrical inspection complete
July 8	Rotated Sala pumps
July 9	Lubed groundwater treatment plant and west gate.
July 20	Replaced filters in main filter
July 20	Rotated and lubed Sala pumps
July 21	Lubed groundwater treatment plant plus all red valves
July 29	Rotated Sala pumps
July 26	Carbon transfer

TABLE 5-2
Treated Water Results Summary

Collected	Set No.	pH (6-9)		TSS 5 PPM		TOC 55 PPM		O&G 15 PPM		Benzene 150 PPB		Chlor HC's 500 PPB		Total PCBs 0.65 PPB		Napthalene 300 PPB	
		Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg
5-Apr-94	M03A0224	7.76		3.		38.9		.5		2.5		48.		.13		5.	
7-Apr-94	M03A0225	7.5		.5		35.6		2.5		2.5		465.		.13		5.	
11-Apr-94	M03A0226	7.48		5.		46.4		2.5		2.5		474.		.13		5.	
14-Apr-94	M03A0227	7.79		4.		14.		2.5		2.5		58.		.13		5.	
18-Apr-94	M03A0228	7.61		2.		50.9		2.5		2.5		633.		.16		5.	
21-Apr-94	M03A0229	7.62		4.		52.5		2.5		2.5		530.		.16		5.	
25-Apr-94	M03A0230	7.62		4.		56.3		2.5		2.5		584.		.16		5.	
28-Apr-94	M03A0231	7.62		.5		49.6		2.5		2.5		424.		.16		5.	
2-May-94	M03A0232	7.91		11.		27.9		2.5		2.5		350.		.16		5.	
5-May-94	M03A0233	7.77	7.66	5.	4.	55.	43.13	.5	2.28	2.5	2.5	518.	448.44	.16	.15	5.	5.
9-May-94	M03A0234	7.69	7.68	6.	4.61	51.6	44.91	2.5	2.28	2.5	2.5	31.	400.22	.16	.15	5.	5.
12-May-94	M03A0235	7.87	7.72	18.	6.06	49.1	45.21	2.5	2.28	2.5	2.5	800.	436.44	.16	.16	5.	5.
16-May-94	M03A0236	7.61	7.7	4.	6.06	29.1	46.89	2.5	2.28	2.5	2.5	350.	468.89	.16	.16	5.	5.
19-May-94	M03A0237	7.49	7.69	1.	5.94	44.3	46.16	2.5	2.28	2.5	2.5	421.	445.33	.16	.16	5.	5.
23-May-94	M03A0238	7.58	7.68	2.	5.72	42.3	45.02	2.5	2.28	6.	2.89	497.	441.67	.16	.16	5.	5.
27-May-94	M03A0239	7.3	7.65	4.	5.72	14.4	40.37	2.5	2.28	2.5	2.89	52.	382.56	.16	.16	5.	5.
30-May-94	M03A0240	7.54	7.64	8.	6.56	30.9	38.29	2.5	2.28	2.5	2.89	290.	367.67	.16	.16	5.	5.
2-Jun-94	M03A0241	7.72	7.62	1.	5.44	14.6	36.81	2.5	2.28	2.5	2.89	78.	337.44	.16	.16	5.	5.
6-Jun-94	M03A0242	7.6	7.6	1.	5.	26.5	33.64	2.5	2.5	2.5	2.89	474.	332.56	.16	.16	5.	5.
9-Jun-94	M03A0243	7.48	7.58	1.	4.44	39.1	32.26	2.5	2.5	6.	3.28	520.	386.89	.16	.16	5.	5.
13-Jun-94	M03A0244	7.64	7.55	7.	3.22	40.1	31.26	2.5	2.5	6.	3.67	602.	364.89	.16	.16	5.	5.
16-Jun-94	M03A0245	7.54	7.54	6.	3.44	20.9	30.34	2.5	2.5	2.5	3.67	440.	374.89	.16	.16	5.	5.
20-Jun-94	M03A0246	7.44	7.54	1.	3.44	36.7	29.5	2.5	2.5	6.	4.06	287.	360.	.16	.16	5.	5.
23-Jun-94	M03A0247	7.38	7.52	3.	3.56	37.9	29.01	2.5	2.5	6.	4.06	301.	338.22	.16	.16	5.	5.
27-Jun-94	M03A0248	7.36	7.52	5.	3.67	43.6	32.26	2.5	2.5	6.	4.44	401.	377.	.16	.16	5.	5.
30-Jun-94	M03A0249	7.43	7.51	4.	3.22	29.	32.04	2.5	2.5	2.5	4.44	108.	356.78	.16	.16	5.	5.
4-Jul-94	M03A0250	7.79	7.52	9.	4.11	21.4	32.8	2.5	2.5	6.	4.83	201.	370.44	.16	.16	5.	5.
7-Jul-94	M03A0251	7.47	7.5	9.	5.	30.1	33.2	2.5	2.5	2.5	4.83	181.	337.89	.16	.16	5.	5.
11-Jul-94	M03A0252	7.44	7.5	1.	5.	26.8	31.83	2.5	2.5	2.5	4.44	236.	306.33	.16	.16	5.	5.
14-Jul-94	M03A0253	7.28	7.46	1.	4.33	43.3	32.19	2.5	2.5	6.	4.44	223.	264.22	.16	.16	5.	5.
18-Jul-94	M03A0254	7.24	7.43	3.	4.	31.9	33.41	2.5	2.5	6.	4.83	348.	254.	.16	.16	5.	5.
21-Jul-94	M03A0255	7.27	7.41	1.	4.	43.6	34.18	2.5	2.5	6.	4.83	228.	247.44	.16	.16	5.	5.
25-Jul-94	M03A0256	7.27	7.39	7.	4.44	38.2	34.21	2.5	2.5	2.5	4.44	204.	236.67	.16	.16	5.	5.
28-Jul-94	M03A0257	7.31	7.39	4.	4.33	32.5	32.98	2.5	2.5	2.5	4.06	206.	215.	.16	.16	5.	5.
1-Aug-94	M03A0258																
4-Aug-94	M03A0259																
8-Aug-94	M03A0260																

Chlorinated hydrocarbons value is sum of detected concentrations of 21 volatile chlorinated hydrocarbons on target compound list.

TABLE 5-2 (Continued)
Treated Water Results Summary

Collected	Set No.	As 150 PPB		Be 200 PPB		Cd 50 PPB		Cr 500 PPB		Cu 15 PPB		Pb 66 PPB		Mn 300 PPB		Hg 1 PPB		Ni 148 PPB		Se 20 PPB		Ag 5 PPB		Zn 162 PPB	
		Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg	Daily	R-Avg
5-Apr-94	M03A0224	15.		34.		1.6		5.3		13.3		3.8		24.2		.1		2.5		6.7		.3		28.6	
7-Apr-94	M03A0225	18.9		.5		.3		.9		7.7		6.3		25.4		.1		2.2		8.4		9.8		11.	
11-Apr-94	M03A0226	29.5		21.2		.4		1.		59.		4.		28.4		.1		11.3		1.3		.1		30.	
14-Apr-94	M03A0227	24.1		13.7		2.3		2.2		41.4		10.2		10.6		.1		13.		8.6		12.7		21.4	
18-Apr-94	M03A0228	18.		15.		1.6		4.3		22.3		1.5		27.1		.1		10.8		6.		10.4		24.6	
21-Apr-94	M03A0229	38.4		15.		3.2		6.7		27.2		1.5		35.7		.1		16.7		6.7		17.6		33.2	
25-Apr-94	M03A0230	11.		50.		1.5		2.5		13.		57.		21.		.1		7.		2.5		2.5		11.	
28-Apr-94	M03A0231	14.		50.		1.5		2.5		6.		.8		23.		.1		8.		2.5		2.5		2.5	
2-May-94	M03A0232	22.4		33.2		.4		3.		29.9		.8		26.5		.1		3.2		1.		5.7		19.6	
5-May-94	M03A0233	32.1	23.2	69.2	29.8	.8	1.3	2.8	2.9	8.8	23.9	1.5	9.3	96.7	32.7	.1	.1	4.5	8.5	2.	4.3	8.3	7.7	15.7	18.8
9-May-94	M03A0234	14.	22.6	50.	35.3	1.3	1.4	2.5	3.1	5.	23.6	.8	8.7	33.	33.6	.1	.1	5.	8.8	2.5	3.7	2.5	6.9	9.	18.6
12-May-94	M03A0235	15.	21.	33.	36.6	2.5	1.7	2.5	3.2	40.	21.5	1.	8.3	16.	32.2	.1	.1	6.	8.2	5.	4.1	5.	7.5	15.	16.9
16-May-94	M03A0236	14.6	19.9	43.5	39.9	.5	1.5	2.2	3.2	34.3	20.7	1.	7.3	26.5	33.9	.1	.1	4.5	7.3	1.	3.2	7.	6.8	13.2	16.
19-May-94	M03A0237	16.	19.7	5.	38.8	2.5	1.6	2.5	3.	30.	21.6	1.	7.3	24.	33.6	.1	.1	6.	6.8	2.5	2.9	6.	6.3	31.	16.7
23-May-94	M03A0238	17.	17.3	44.	42.	.5	1.3	.5	2.3	6.	19.2	1.	7.2	13.	31.1	.1	.1	2.5	5.2	1.	2.2	5.	4.9	7.	13.8
26-May-94	M03A0239	15.	17.8	39.	40.8	.5	1.2	.5	2.1	6.	18.4	1.	1.	9.	29.7	.1	.1	6.	5.1	1.	2.1	4.	5.1	6.	13.2
30-May-94	M03A0240	17.	18.1	37.	39.3	.4	1.	1.	1.9	4.	18.2	1.	1.	16.	29.	.1	.1	10.	5.3	1.	1.9	2.	5.1	3.	13.3
2-Jun-94	M03A0241	20.	17.9	29.	38.9	.5	1.1	1.	1.7	15.	16.6	2.	1.1	18.	28.	.1	.1	2.5	5.2	1.	1.9	2.	4.6	18.	13.1
6-Jun-94	M03A0242	11.	15.5	45.	36.2	.5	1.	8.	2.3	137.	30.8	1.	1.1	31.	20.7	.1	.1	6.	5.4	2.	1.9	10.	4.8	72.	19.4
9-Jun-94	M03A0243	15.	15.6	57.	36.9	.5	.9	2.	2.2	12.	31.6	2.	1.2	34.	20.8	.1	.1	12.	6.2	.3	1.6	3.	4.9	9.	19.4
13-Jun-94	M03A0244	11.	15.2	82.	42.4	.8	.7	13.	3.4	9.	28.1	1.	1.2	19.	21.2	.1	.1	12.	6.8	1.	1.2	3.8	4.8	14.	19.2
16-Jun-94	M03A0245	12.	14.9	94.	48.	1.	.8	1.	3.3	10.	25.4	1.	1.2	21.	20.6	.1	.1	12.	7.7	1.	1.2	3.	4.3	7.	18.6
20-Jun-94	M03A0246	9.7	14.2	116.	60.3	1.2	.7	.9	3.1	12.	23.4	1.	1.2	14.	19.4	.1	.1	10.	8.1	2.	1.1	2.8	4.	6.	15.8
23-Jun-94	M03A0247	14.	13.9	122.	69.	1.5	.8	.8	3.1	11.	24.	1.	1.2	21.	20.3	.1	.1	7.5	8.7	1.	1.1	2.5	3.7	11.	16.2
27-Jun-94	M03A0248	10.	13.3	121.	78.1	1.5	.9	9.	4.1	12.5	24.7	1.	1.2	18.	21.3	.1	.1	9.6	9.1	1.	1.1	3.6	3.6	16.	17.3
30-Jun-94	M03A0249	13.	12.9	108.	86.	1.5	1.	.3	4.	7.	25.1	1.	1.2	9.	20.6	.1	.1	8.	8.8	1.	1.1	3.	3.7	5.	17.6
4-Jul-94	M03A0250	16.	12.4	68.5	90.4	.2	1.	.3	3.9	3.5	23.8	.5	1.1	9.6	19.6	.1	.1	3.1	8.9	1.	1.1	2.6	3.8	12.	16.9
7-Jul-94	M03A0251	14.9	12.8	104.	96.9	.3	.9	.8	3.1	11.	9.8	1.	1.1	20.	18.4	.1	.1	5.	8.8	1.	1.	3.	3.	10.	10.
11-Jul-94	M03A0252	10.	12.3	110.	102.8	.5	.9	.5	3.	5.	9.	1.5	1.	10.	15.7	.1	.1	4.	7.9	1.5	1.2	3.	3.	10.	10.1
14-Jul-94	M03A0253	18.	13.1	105.	105.4	.3	.9	.3	1.5	6.	8.7	.8	1.	7.	14.4	.1	.1	4.5	7.1	.8	1.1	1.5	2.8	17.	10.4
18-Jul-94	M03A0254	10.	12.8	60.	101.6	.5	.8	.5	1.5	4.	8.	1.5	1.	10.	13.2	.1	.1	2.	6.	1.5	1.2	2.	2.7	10.	10.8
21-Jul-94	M03A0255	10.	12.9	100.	99.8	.5	.7	.5	1.4	6.	7.3	1.5	1.1	7.	12.4	.1	.1	7.	5.6	1.5	1.1	1.	2.5	10.	11.2
25-Jul-94	M03A0256	8.	12.2	110.	98.5	.3	.6	.3	1.4	3.	6.4	.8	1.1	6.	10.7	.1	.1	6.	5.5	2.	1.3	.5	2.2	6.	10.7
28-Jul-94	M03A0257	13.	12.5	64.	92.2	.3	.5	.6	.4	15.	6.7	.8	1.	29.	12.	.1	.1	6.	5.1	2.	1.4	.5	1.9	8.	9.8
1-Aug-94	M03A0258																								
4-Aug-94	M03A0259																								
8-Aug-94	M03A0260																								

Metals values in PPB

ATTACHMENT 5A

Rochem Environmental, Inc. - Progress Report

053963

ROCHEM
ENVIRONMENTAL, INC.

610 N. Milby Street
Houston, Texas 77003

Phone: (713) 224-7626
Fax: (713) 224-7627

August 1, 1994

Mr. Mark Collins
French Limited Project
15010 F.M. 2100, Suite 200
Crosby, Texas 77532

Dear Mark:

We are submitting our report for the month July.

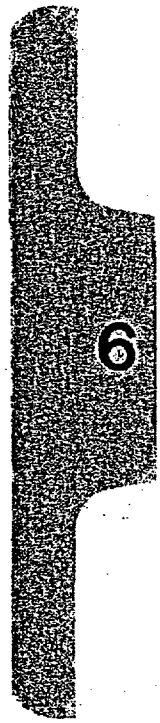
During the month, we treated 3,316,900 gallons of water. On contract we have 32,943,600 gallons to date.

Operations continue to produce excellent quality discharge.

Sincerely,

Kenneth A. Miller
President

/plz


6

6.0 AMBIENT AIR MANAGEMENT

Ambient air quality management continued on an "as-needed" basis to protect the environment, human health, and site workers.

6.1 Summary of Activities

Collected and analyzed three time-integrated personnel exposure samples; the measured levels of volatile organic compounds were well below the action levels.

Sampled the ambient air in all work areas several times per shift and on a random "spot-check" basis; there were no levels of volatile organic compounds which required response action. Sampled ambient air in special work areas where burning and/or welding was planned.

6.2 Problems and Response Action

Problem	Response Action
Calibrate portable vapor meters.	Train operators to calibrate; refurbish all meters.
Sampling "hot" wells.	Require respirator use when sampling "hot" wells.
Ambient air quality in all work areas.	Check all work areas with portable meter several times per day.

6.3 Problems Resolved

None.

6.4 On-going Events/Activities

Measure ambient air quality in all work areas several times per day.

Conduct time-integrated sampling in all major work areas.

Require respiratory protection when sampling "hot" wells.

Conduct necessary air sampling and analyses to issue "burn" permits.

Closely monitor ambient air quality in the vicinity of new projects/activities.

Conduct respirator fit tests on all employees.


7

7.0 QUALITY ASSURANCE/QUALITY CONTROL

7.1 Summary of Activities

7.1.1 *Sampling*

One set of personal air monitoring samples were collected in July. The following is a summary of current routine and special air matrix code sample specifics:

MATRIX CODE	SAMPLE SPECIFICS
M01D	TF at three locations

TF = Tenax® front tube

Table 7-1 is a summary of the air, soil and water samples collected for the month of July. Table 7-2 is a summary of Scheduled Sampling Events for the month of July.

7.1.2 Data Validation Activities Summary

7.1.2.1 Treated Water Samples

Data validation has been completed for sample sets M03A0242, M03A0243, M03A0244, M03A0245, M03A0246, M03A0247, M03A0248, M03A0249 M03A0250, M03A0251. These samples were collected between June 6, 1994 and July 7, 1994. QC failures are summarized in Table 7-3. Completeness values are summarized in Tables 7-4 through 7-8.

7.1.2.2 Groundwater Samples

Level I manual data validation was performed on all groundwater sample sets submitted this period. The analytical QA/QC validation results for the second quarter 1994 groundwater monitoring event will be reported in the August monthly report.

7.1.2.3 Other Samples

The Reandeau shower air quality monitoring analytical data was validated manually. All other special sample sets were validated manually this period.

7.2 Data Validation QC Summary and Discussion

7.2.1 Level I and Level II QC Philosophy

The Quality Assurance Project Plan (QAPP) defines data validity in terms of procedural requirements which must be followed for data comparability, and numerical data quality objectives which must be met to assure precision and accuracy of the results. Precision, accuracy and completeness are the numerical Data Quality Objectives (DQOs) established for the French Project by the QAPP. The intent of the data validation process is to verify that the documentation and quality control data provided by the laboratory properly substantiate the required data quality.

For purposes of data validation procedures, the QAPP defines two QC levels: Level I and Level II. Level I data validation is specified for process control and progress monitoring sample data validation and Level II data validation is specified for remediation verification sample results and treated water discharge sample results.

7.2.2 QA Issues

7.2.2.1 Treated water discharge samples - Metals investigation

Treated water discharge samples continue to have elevated metals concentrations. The two analytes of most interest have been Copper and Silver. The program of splitting each composite sample and sending an aliquot of sample to American Analytical and Technical Services and Chester LabNet-Houston continued through July. The results of these analyses and discussions with the laboratory director indicated a sample contamination problem within the metals sample preparation laboratory at American Analytical and Technical Services. The cause seems to have been that the digestion vessels were not consistently covered with a watch glass. This practice allowed particulates to fall into the digestion vessel and contaminate the sample. Since the implementation of corrective actions, the metals concentrations have fallen within historically consistent values. A copy of the corrective action memos issued by American Analytical and Technical Services is attached (Attachment 7A).

7.2.2.2 Responses to the Laboratory Audit on April 19, 1994

The laboratory submitted responses to the audit report issued on May 10, 1994. All issues requiring responses were addressed appropriately. See Attachment 7B.

TABLE 7-1

Samples Collected - July, 1994

Sample No.	Description	Location	Date Samp'd	Lab Rec'd	Data Rec'd	Lab
M01D004401	Personal air monitoring	GWTP Oper.	7/20	7/22	Y	AATS
M01D004402	Personal air monitoring	Rochem Oper.	7/20	7/22	Y	AATS
M01D004403	Personal air monitoring	Well Oper.	7/20	7/22	Y	AATS
M01E029001	Reandeau shower air quality risk evaluation	Baseline	7/07	7/08	Y	AATS
M01E029002	Reandeau shower air quality risk evaluation	R1-100cc/min	7/07	7/08	Y	AATS
M01E029003	Reandeau shower air quality risk evaluation	R1-200cc/min	7/07	7/08	Y	AATS
M01E029004	Reandeau shower air quality risk evaluation	R1-400cc/min	7/07	7/08	Y	AATS
M01E029005	Reandeau shower air quality risk evaluation	R1-800cc/min	7/07	7/08	Y	AATS
M01E029006	Reandeau shower air quality risk evaluation	R2-100cc/min	7/07	7/08	Y	AATS
M01E029007	Reandeau shower air quality risk evaluation	R2-200cc/min	7/07	7/08	Y	AATS
M01E029008	Reandeau shower air quality risk evaluation	R2-400cc/min	7/07	7/08	Y	AATS
M01E029009	Reandeau shower air quality risk evaluation	R2-800cc/min	7/07	7/08	Y	AATS
M03A025001	Treated water discharge	CF Out	7/04	7/05	Y	AATS
M03A025101	Treated water discharge	CF Out	7/07	7/08	Y	AATS
M03A025201	Treated water discharge	CF Out	7/11	7/12	Y	AATS
M03A025301	Treated water discharge	CF Out	7/14	7/15	N	AATS
M03A025401	Treated water discharge	CF Out	7/18	7/19	N	AATS
M03A025501	Treated water discharge	CF Out	7/21	7/22	N	AATS

TABLE 7-1 (Continued)

Samples Collected - July, 1994

Sample No.	Description	Location	Date Samp'd	Lab Rec'd	Data Rec'd	Lab
M03A025601	Treated water discharge	CF Out	7/25	7/26	N	AATS
M03A025701	Treated water discharge	CF Out	7/28	7/29	N	AATS
M06C001701	Process monitoring samples	T-101 Eff	7/04	7/05	Y	AATS
M06C001702	Process monitoring samples	T-101 Inf-1	7/04	7/05	Y	AATS
M06C001703	Process monitoring samples	T-101 Inf-2	7/04	7/05	Y	AATS
M06C001704	Process monitoring samples	R1	7/04	7/05	Y	AATS
M06C001705	Process monitoring samples	R2	7/04	7/05	Y	AATS
M06C001706	Process monitoring samples	Rochem Prod.	7/04	7/05	Y	AATS
M08A001601	Potable water	Pot. Water	7/19	7/05	N	AATS
M08B000401	Potable water	Potable H2O	7/19	7/05	Y	AATS
M08C000501	Riverdale residential wells	RD-1	7/15	7/15	Y	NWDL
M08C000502	Riverdale residential wells	RD-2	7/15	7/15	Y	NWDL
M08D000701	Riverdale residential wells	RD-1	7/15	7/15	Y	CHES
M08D000702	Riverdale residential wells	RD-2	7/15	7/15	Y	CHES
S14A008401	Injection water nutrients	S1-065	7/07	7/08	Y	AATS
S14A008402	Injection water nutrients	S1-070	7/07	7/08	Y	AATS
S14A008403	Injection water nutrients	INT-071	7/07	7/08	Y	AATS
S14A008501	Injection water nutrients	S1-065	7/07	7/07	Y	CHES

TABLE 7-1 (Continued)

Samples Collected - July, 1994

Sample No.	Description	Location	Date Samp'd	Lab Rec'd	Data Rec'd	Lab
S14A008502	Injection water nutrients	S1-070	7/07	7/07	Y	CHES
S14A008503	Injection water nutrients	INT-071	7/07	7/07	Y	CHES
S14A008601	Injection water nutrients	S1-065	7/14	7/15	Y	AATS
S14A008602	Injection water nutrients	S1-070	7/14	7/15	Y	AATS
S14A008603	Injection water nutrients	INT-071	7/14	7/15	Y	AATS
S14A008701	Injection water nutrients	S1-065	7/14	7/14	Y	CHES
S14A008702	Injection water nutrients	S1-070	7/14	7/14	Y	CHES
S14A008703	Injection water nutrients	INT-071	7/14	7/14	Y	CHES
S14A008801	Injection water nutrients	S1-065	7/21	7/22	N	AATS
S14A008802	Injection water nutrients	S1-070	7/21	7/22	N	AATS
S14A008803	Injection water nutrients	INT-071	7/21	7/22	N	AATS
S14A008901	Injection water nutrients	S1-065	7/21	7/21	N	CHES
S14A008902	Injection water nutrients	S1-070	7/21	7/21	N	CHES
S14A008903	Injection water nutrients	INT-071	7/21	7/21	N	CHES
S16B001601	Treated water metals split	CF-OUT	7/04	7/04	Y	CHES
S16B001701	Treated water metals split	CF-OUT	7/07	7/07	Y	CHES
S16B001801	Treated water metals split	CF-OUT	7/11	7/11	Y	CHES

TABLE 7-1 (Continued)

Samples Collected - July, 1994

Sample No.	Description	Location	Date Samp'd	Lab Rec'd	Data Rec'd	Lab
S16B001901	Treated water metals split	CF-OUT	7/14	7/14	Y	CHES
S16B002001	Treated water metals split	CF-OUT	7/18	7/18	N	CHES
S16B002101	Treated water metals split	CF-OUT	7/21	7/21	N	CHES
S16B002201	Treated water metals split	CF-OUT	7/25	7/25	N	CHES
S16B002301	Treated water metals split	CF-OUT	7/28	7/28	N	CHES
S19E000401	Atascosita backfill source	Composite 1	7/06	7/08	N	AATS

TABLE 7-2

Scheduled Sampling Events

Date Sampled	Set Number	Description	Schedule
7/06/94	S19E0004	Atascosita Backfill Comp.	Special
7/04/94	S16B0016	Discharge water metals	Special
7/07/94	S16B0017	Discharge water metals	Special
7/11/94	S16B0018	Discharge water metals	Special
7/14/94	S16B0019	Discharge water metals	Special
7/18/94	S16B0020	Discharge water metals	Special
7/21/94	S16B0021	Discharge water metals	Special
7/25/94	S16B0022	Discharge water metals	Special
7/28/94	S16B0023	Discharge water metals	Special
7/07/94	S14A0084	Injection Water Nutrients	Weekly
7/07/94	S14A0085	Injection Water Nutrients	Weekly
7/14/94	S14A0086	Injection Water Nutrients	Weekly
7/14/94	S14A0087	Injection Water Nutrients	Weekly
7/21/94	S14A0088	Injection Water Nutrients	Weekly
7/21/94	S14A0089	Injection Water Nutrients	Weekly
7/28/94	S14A0090	Injection Water Nutrients	Weekly
7/28/94	S14A0091	Injection Water Nutrients	Weekly
7/04/94	M06C0017	Monthly Process Water	Monthly
7/20/94	M01D0044	Personal Air Monitoring	Monthly
7/19/94	M08A0016	Potable Water	Quarterly
7/19/94	M08B0004	Potable Water	Quarterly
7/15/94	M08C0005	Riverdale resident wells	Monthly
7/15/94	M08D0007	Riverdale resident wells	Monthly
7/07/94	M01E0290	Shower Air Risk Assesment	Special
7/04/94	M03A0250	Treated Water Discharge	Biweekly
7/07/94	M03A0251	Treated Water Discharge	Biweekly
7/11/94	M03A0252	Treated Water Discharge	Biweekly
7/14/94	M03A0253	Treated Water Discharge	Biweekly
7/18/94	M03A0254	Treated Water Discharge	Biweekly
7/21/94	M03A0255	Treated Water Discharge	Biweekly
7/25/94	M03A0256	Treated Water Discharge	Biweekly
7/28/94	M03A0257	Treated Water Discharge	Biweekly

TABLE 7-3

Treated Water
QC Failure Summary

Sample Date	Test	QC Failure	Explanation	Corrective Action
06/06/94	Se	Duplicate Precision	Sample has a detected concentration of Se; duplicate was non-detect	None required-does not affect data quality
06/06/94	SV	SU Recov.	SU4 recovery was outside QC limits for sample -01 and -01 MSD	None- required-Matrix effect indicated
06/09/94	PCB	SU Recov.	SU DCB recovery was outside QC limits on sample -01, column 2	None required per method protocol
06/09/94	Pb	Duplicate Precision	Sample has a detected concentration of Pb; duplicate was non-detect	None required-does not affect data quality
06/13/94	SV	SU Recov.	SU4 recovery was outside QC limits for sample -01	None- required
06/20/94	SV	MS Recov.	Spike recovery was outside control limits(high) for Pentachlorophenol	None- required-Matrix effect indicated RPD within QC limits.
06/23/94	SV	SU Recov.	SU4 recovery was outside QC limits for sample -01	None- required
06/23/94	PCB	SU Recov.	SU DCB recovery was outside QC limits on sample -01, column 1	None required per method protocol
06/27/94	SV	MS Recov.	Spike recovery was outside control limits(high) for Pentachlorophenol	None- required-Matrix effect indicated. RPD within QC limits.
07/07/94	SV	MS Precision	MS/MSD relative percent difference was outside QC limits on Pentachlorophenol	None required-historical matrix effect on this compound.
07/07/94	PCB	SU Recov.	SU DCB recovery was outside QC limits on sample -01 MS, column 1 & 2	None required; surrogate concentration low, but within QC limits on -01 & -01 MSD

7.2.3 Completeness Summaries

Tables 7-4 through 7-8 summarize completeness values for VOA, SVA, PCBs, Metals and miscellaneous parameters on treated water samples.

VOA (Table 7-4)

A total of 10 VOA sample sets have been validated with all categories meeting Project Completeness Goals.

SVA (Table 7-5)

A total of 10 SVA sample sets have been validated for this time period. All categories meet or exceed Project Completeness Goals.

PCBs (Table 7-6)

A total of 10 PCB sample sets have been validated for this time period with all samples, meeting data quality objectives. All categories meet or exceed Project Completeness Goals.

Metals (Table 7-7)

A total of 10 sample sets have been validated for this time period. Project Completeness Goals are met or exceeded in all categories with the exception of those listed in Table 7-6.

Miscellaneous Parameters (Table 7-8)

A total of 10 sample sets have been validated for this time period. Project completeness goals are met or exceeded in all categories.

TABLE 7-4

Completeness Summary
M03A Treated Water
Volatile Organics Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	Project to Date	PROJECT GOAL
Analysis Holding Time	100	100	100
12 Hour Window	100	100	100
SU Check	100	92	90
SU1 (d4-1,2-DCE)	100	97	90
SU2 (d8-Toluene)	100	97	90
SU3 (4-BFB)	100	99	90
IS Check	100	100	90
IS1 (BrClMethane)	100	100	90
IS2 (1,4-DiFlBenzene)	100	100	90
IS3(d5-ClBenzene)	100	100	90
Sample RT/RRT Check	100	*	
Vinyl Chloride			
Accuracy	100	99	90
Precision	100	99	90
Benzene			
Accuracy	100	99	90
Precision	100	100	90
No Group Matrix Effect	100	*	90
No Sample Matrix Effect	100	*	90
Tune Check	100	*	
Overall ICAL Check	100	*	
Overall CCAL Check	100	*	
Overall Lab Blank Check	100	*	

* - Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD completeness values do not apply to these checks.

TABLE 7-5

Completeness Summary
M03A Treated Water
Semivolatile Organic Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	Project to Date	PROJECT GOAL
Extract Holding Time	100	100	100
Analysis Holding Time	100	100	100
12 Hour Window	100	100	100
SU Check	**100**	**94**	**90**
SU1 (2-FlPhenol)	100	94	90
SU2 (d5-Phenol)	100	92	90
SU3 (d5-Nitrobenz)	100	97	90
SU4(2-FlBiphenyl)	70	98	90
SU5(2,4,6-TBPh)	100	95	90
SU6(d14-Terphen)	100	96	90
IS Check	**100**	**95**	**90**
IS1 (d4-1,4-DiClBenz)	100	100	90
IS2 (d8-Naph)	100	100	90
IS3 (d10-Acenaph)	100	100	90
IS4 (d10-Phenanth)	100	99	90
IS5 (d12-Chrysene)	100	97	90
IS6 (d12-Perylene)	100	95	90
Sample RT/RRT	100	*	*
Napthalene			
Accuracy	100	100	90
Precision	100	99	90
No Group Matrix Effect	100	100	90
No Sample Matrix Effect	100	92	90
Tune Check	100	*	*
Overall ICAL Check	100	*	*
Overall CCAL Check	100	*	*
Overall Lab Blank Check	100	*	*

* - Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD completeness values do not apply to these checks.

TABLE 7-6

Completeness Summary
M03A Treated Water
PCB Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	Project to Date	PROJECT GOAL
Extract Holding Time	100	100	100
Analysis Holding Time	100	100	100
12 Hour Window	100	100	100
SU Check - Column A	90	99	90
SU1 (DCBP)	90	81	NS
SU2 (TCMX)	100	97	NS
SU Check - Column B	90	97	90
SU1 (DCBP)	90	82	NS
SU2 (TCMX)	100	98	NS
SU Check - Column A or B	90	98	90
Aroclor 1242			
Accuracy	100	96	90
Precision	100	97	90
Overall ICAL Check	100	*	
Overall 1st CCAL Check	100	*	
Overall 2nd CCAL Check	100	*	
Overall Lab Blank Check	100	*	

* - Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD completeness values do not apply to these checks.

TABLE 7-7

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	PROJECT GOAL
ANALYTE: BARIUM		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: CADMIUM		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: CHROMIUM		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: COPPER		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: LEAD		
MS Accuracy	100	95
DUP Precision/Difference	90	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-7 (Continued)

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	PROJECT GOAL
ANALYTE: MANGANESE		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	NA	100
Lab Control Spike Check	100	100
ANALYTE: NICKEL		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: SILVER		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: ZINC		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	NA	100
Lab Control Spike Check	100	100
ANALYTE: MERCURY		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-7 (Continued)

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	PROJECT GOAL
ANALYTE:ARSENIC		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: SELENIUM		
MS Accuracy	100	95
DUP Precision/Difference	90	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-8

Completeness Summary
M03A Treated Water
Miscellaneous Parameters Analyses

SAMPLE DATE SET NUMBER	M03A0242 through M03A0251	Project to Date	PROJECT GOAL
PARAMETER: TOC			
Analysis Hold Time	100	100	100
MS Accuracy	100	100	NA
DUP Precision	100	100	NA
PARAMETER: OILS			
Analysis Hold Time	100	100	100
MS Accuracy	100	100	NA
DUP Precision	100	100	NA
PARAMETER: TSS			
Analysis Hold Time	100	100	100
MS Accuracy	NA	NA	NA
DUP Precision	100	100	NA

Attachment 7A

**Laboratory Corrective Action Memo
for Metals on Treated water Discharge Samples
American Analytical and Technical Services**

053986

AMERICAN ANALYTICAL & TECHNICAL SERVICES, INC.

28 July 1994

To: Ron Jansen
FLTG, Inc.

From: K.M. (Doss) Bagawandoss, Ph.D.
AATS, Inc.

Subject: Corrective Action for Elevated Levels of Copper (Cu)
French Limited Project - Crosby, Texas
AATS Ref. No. HOU 1467 BR

Cu levels for treated water (MO3A) were reported by AATS between 9 to 14 ppb after corrective action was instituted June 3, 1994 (per attached memo). On June 6 Cu was reported @ 137 ppb. The samples were split with Southwest Laboratory of Oklahoma, Inc. and Keystone Labs. The results confirmed the values obtained by AATS.

On July 13, 1994 a Cu value of 26 ppb was reported. The values were confirmed by redigestion and reanalysis internally by AATS. The value was further confirmed by furnace analysis. The split sample which was sent to Keystone Labs was reported to be ND.

AATS instituted an investigation internally and found out that during the process of digestion, the samples were not consistently covered with the watch glass during digestion. This is not the normal procedure at AATS. The concern was that in order to achieve the lower detection limits (for FLTG), the samples were being digested from a 200 ml sample volume rather than the normal 100 ml sample. In order to speed the process of digestion, the samples were not covered with the watch glass. However, there was an oversight on the part of the prep analyst that particles could possibly fall into sample extracts from the fume hood. This is the most probable cause for the Cu values being elevated.

Upon instituting the corrective action procedure (July 18, 1994) of covering the digestion vessels with watch glasses, the Cu values have reduced between 4 to 6 ppb. Enclosed are the results since the corrective action.

We apologize for any inconvenience caused due to the above problem. We at AATS are committed to serving FLTG, Inc.

End .

11950 INDUSTRIPLEX BLVD. • BATON ROUGE, LA 70809 • OFFICE (504) 753-8650 • FAX (504) 751-1405

B

Attachment 7B

Laboratory Audit Responses
for April 19, 1994 Audit
American Analytical and Technical Services

053989

AMERICAN ANALYTICAL & TECHNICAL SERVICES, INC.
11950 Industriplex Blvd. • Baton Rouge, LA 70809 • Office (504) 753-8650 • Fax (504) 751-1405

July 25, 1994

Mr. Ron Jansen
FLTG, Incorporated.
1024 Gulf Pump Road
Crosby, Texas 77532

RE: Quality Assurance Audit Response.

Dear Mr. Jansen:

Following are the responses to the audit memo submitted to Dr. Bagawandoss on May 10, 1994 for the audit performed at our facility on April 19, 1994.

RECOMMENDATIONS

Recommendation 1: Two safety showers have been purchased, received and are waiting to be installed. Eyewash stations are installed on the sink faucets in the organic extractions, metals and wet chemisrty areas.

Recommendation 2: The description of the laboratory data flow for data validation is attached for your review.

Recommendation 3: Both the GC and GC/MS labs follow the procedures for qualitative and quantitative criteria as outlined in the EPA Statement of Work 2/88 and 3/90, as required. The SOP's for these labs will be revised to reflect this, as you requested.

Recommendation 4: The AATS Quality Assurance Manual is revised as necessary with the review and approval of the Laboratory Manager. The revision number and date are tracked on the title page of the Quality Assurance Manual. A record is kept of uniquely numbered manual along with the signature of the recipient. Incorporation of a revision control system within the manual is under consideration.

Recommendation 5: For organic QB 2 FY94, no response was required as the evaluation score was greater than 90 percent. Please see attached.
The response for inorganic QB 1 FY94 is attached.
The response for WS 033 PE is also attached.
The response for WP 031 was supplied to the audit team.

OBSERVATIONS

Observation 1: The table is being moved.

053990

AMERICAN ANALYTICAL & TECHNICAL SERVICES, INC.
11950 Industriplex Blvd. • Baton Rouge, LA 70809 • Office (504) 753-8650 • Fax (504) 751-1405

July 25, 1994

Mr. Ron Jansen
FLTG, Incorporated.
Page Two

Observation 2: The lab appreciates this observation and will take it into consideration.

Observation 3: The lab appreciates this observation and will take it into consideration.

Observation 4: The date received is written on each bottle of reagent or solvent on receipt.

Observation 5: AATS appreciates this observation and will take it into consideration.

Observation 6: AATS appreciates this observation and will take it into consideration.

Observation 7: AATS appreciates this observation and will take it into consideration.

Observation 8: The QA Manual resume section and organizational chart now match with respect to personnel and job title. Please see attached.

If you have any questions about this response, please call me at (504) 753-8650.

Sincerely,

Doni Moore
QA/QC Officer

8.0 SITE MAINTENANCE

8.1 Summary of Activities

8.1.1 General Housekeeping

The site safety and housekeeping inspections and responses kept grounds safe and attractive for employees and visitors. The entire project was inspected twice per week, with written inspection reports issued and appropriate corrective action taken.

8.1.2 Purchasing

All purchases were covered by written requisitions and purchase orders. Purchase of chemicals is now reduced to groundwater treatment and insitu remediation.

Requests for proposals were issued to contractors for lifting and moving the marine equipment from Cell F.

8.1.3 Equipment Maintenance

Routine preventive and production maintenance was performed on all equipment. There were no emergency maintenance jobs.

8.2 Visitors

The following visitors were recorded at the site during July:

July 1: Bronson Burcham, YMCA

July 2: (b) (6)

July 7: Bill Schluneger, Brandon

July 12: Muhammad Nunfirman, Brandon O'Seas

July 14: (b) (6), BSchool
BSchool
(b) (6)
Red Hargrove, TEEX

July 19: Frank T. Susko, Allegheny Power
Fritz A. Zuhl, FAZ

July 21: Ron Peede, TNRCC

July 25: Lamar Kinghorn, IT-Davy
Steve Roder, CRA

July 28: M. Mat Houton, Gundle
P. Amos, Gundle

8.3 Emergency Equipment

8.3.1 Flood Gate Test

The exclusion wall gate was closed on July 7, 1994 with a good seal noted and recorded.

8.3.2 P-8 Auxiliary Pump

P-8 Auxiliary Pump was exercised and serviced July 7, 1994.

8.3.3 Fire Extinguishers

All fire extinguishers were inspected and certified.

8.4 Security

Smith Security provides 24-hour security at the FLTG site, including the south side of Gulf Pump Road; all site areas are checked hourly. There were no security incidents recorded in July.

8.5 Operator Training

All training is documented and records are maintained on site. Semi-annual physicals were completed in July. Annual Confined Spaced Entry refresher courses were completed in July.

8.6 Data Management

Data base programming is fully operational. Data is entered on a daily basis.

8.7 Personnel Monitoring

Results of personnel monitoring conducted during July are included in Table 8-1.

8.8 OVM System

The meteorological station was operational.

Work areas are being monitored daily with Organic Vapor Monitor 580A.

8.9 Repository

Records from the July review are listed in Attachment 8A.

TABLE 8-1

On-Site Employee Contaminant Limits
(From OSHA 29 CFR 1910 Subpart Z)

Compound	PEL 8 hour PPM	M01D0044 20-Jul-94 GWT Operator		M01D0044 20-Jul-94 Rochem Oper.		M01D0043 22-Jun-94 Well Operator	
		% of PEL	PPM	% of PEL	PPM	% of PEL	PPM
Chloromethane	50	0.001	0.000	0.002	0.001	0.000	0.000
Bromomethane	5	0.000	0.000	0.000	0.000	0.000	0.000
Vinyl chloride	1	0.000	0.000	0.000	0.000	0.000	0.000
Chloroethane	1000	0.000	0.000	0.000	0.000	0.000	0.000
Dichloromethane	50	0.000	0.000	0.001	0.001	0.000	0.000
Acetone	750	0.001	0.005	0.002	0.013	0.000	0.000
Carbon disulfide	10	0.000	0.000	0.000	0.000	0.000	0.000
1,1-Dichloroethene	5	0.000	0.000	0.000	0.000	0.000	0.000
1,1-Dichloroethane	100	0.001	0.001	0.001	0.001	0.000	0.000
trans-1,2-Dichloroethe	200	0.000	0.000	0.000	0.000	0.000	0.000
Chloroform	10	0.010	0.001	0.000	0.000	0.000	0.000
1,2-Dichloroethane	10	0.003	0.000	0.000	0.000	0.000	0.000
2-Butanone	200	0.001	0.001	0.008	0.016	0.000	0.000
1,1,1-Trichloroethane	350	0.000	0.001	0.000	0.001	0.000	0.000
Carbon Tetrachloride	5	0.003	0.000	0.003	0.000	0.000	0.000
Vinyl acetate	10	0.000	0.000	0.000	0.000	0.000	0.000
Bromodichloromethane			0.000		0.000		0.000
1,2-Dichloropropane	75	0.000	0.000	0.000	0.000	0.000	0.000
cis-1,3-Dichloropropen	1	0.000	0.000	0.000	0.000	0.000	0.000
Trichloroethene	50	0.000	0.000	0.000	0.000	0.000	0.000
Dibromochloromethane			0.000		0.000		0.000
1,1,2-Trichloroethane	10	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	1	0.276	0.003	0.149	0.001	0.000	0.000
trans-1,3-Dichloroprop	1	0.000	0.000	0.000	0.000	0.000	0.000
2-Chloroethylvinyl ether			0.000		0.000		0.000
Bromoform	0.5	0.000	0.000	0.000	0.000	0.000	0.000
4-Methyl-2-pentanone	50	0.001	0.001	0.000	0.000	0.000	0.000
2-Hexanone	5	0.000	0.000	0.000	0.000	0.000	0.000
Tetrachloroethene	50	0.001	0.000	0.000	0.000	0.000	0.000
1,1,2,2-Tetrachloroet	1	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	100	0.007	0.007	0.002	0.002	0.000	0.000
Chlorobenzene	10	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	100	0.002	0.002	0.000	0.000	0.000	0.000
Styrene	50	0.001	0.000	0.000	0.000	0.000	0.000
Xylene (total)	100	0.004	0.004	0.000	0.000	0.000	0.000
Hexane			0.003		0.002		0.000

ATTACHMENT 8A

Repository Status Report: July, 1994

REPOSITORY STATUS REPORT: July, 1994

At the Rice University Library...

1. Remedial Investigation Report April, 1985
2. Remedial Investigation Report June, 1986 (Updated from April, 1985)
3. Remedial Investigation Report Appendices, Volume I, February, 1986 (Revised June, 86)
4. Remedial Investigation Report Appendices, Volume II, April, 1985
5. Remedial Investigation Report Appendices, Volume II, February, 1986 (Revised June, 1986)
6. Remedial Investigation Report Appendices, Volume III, February, I986
7. Remedial Investigation Report Volume I, December, 1986
8. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume I, December, 1986
9. 1986 Field Investigation and Supplemental Remedial Investigation Report French Limited Site Volume II, Appendices December, 1986
10. Laboratory Evaluation of Biodegradation at the French Limited Site
11. 1986 Field Investigation Hydrology Report, December 19, 1986
12. Endangerment Assessment Report February, 1987
13. Endangerment Assessment Report April I987 (Updated from February, 1987)
14. Field Evaluation of Biodegradation at the French Limited Site (Phase II) Volume I
15. Feasibility Study Report, March 1987
16. French Limited Site Focused Feasibility Study (May 1987)
17. In Situ Biodegradation Demonstration Report French Limited Site Volume X Appendices, November 30, 1987

18. In Situ Biodegradation Demonstration Report French Limited Site Volume XI Appendices, November 30, 1987

19. In Situ Biodegradation Demonstration Report French Limited Site Volume XII Appendices, November 30, 1987

20. In Situ Biodegradation Demonstration Report French Limited Site Volume XIV Appendices, November 30, 1987

21. In Situ Biodegradation Demonstration Report French Limited Site Volume XV Appendices, November 30, 1987

22. In Situ Biodegradation Demonstration Report French Limited Site Volume XVI Appendices, November 30, 1987

23. In Situ Biodegradation Demonstration Report French Limited Site Volume XVII Appendices, November 30, 1987

24. In Situ Biodegradation Demonstration Report French Limited Site Volume XVIII Appendices, November 30, 1987

25. In Situ Biodegradation Demonstration Report Volume II, October 30, 1987 (Revised February 1, 1988 at Site only)

26. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume II, November 30, 1987 + Appendices

27. In Situ Biodegradation Demonstration Report French Limited Site Volume III, November 30, 1987

28. In Situ Biodegradation Demonstration Report Volume III

29. In Situ Biodegradation Demonstration Report Volume III, Appendices

30. In Situ Biodegradation Demonstration Report Volume III, October 30, 1987

31. In Situ Biodegradation Demonstration Report Volume III Appendices, October 30, 1987

32. In Situ Biodegradation Demonstration Supplemental Report French Limited Site, Volume IV November 30, 1987 + Appendices

33. In Situ Biodegradation Demonstration Report French Limited Site Volume V, November 30, 1987

34. In Situ Biodegradation Demonstration Report French Limited Site Volume V Appendices, November 30, 1987

35. In Situ Biodegradation Demonstration Report French Limited Site Volume VI Appendices, November 30, 1987

36. In Situ Biodegradation Demonstration Report French Limited Site Volume VII Appendices, November 30, 1987

37. In Situ Biodegradation Demonstration Report French Limited Site Volume VIII Appendices, November 30, 1987

38. In Situ Biodegradation Demonstration Report French Limited Site Volume IX Appendices, November 30, 1987

39. Proposed In Situ Biodegradation Demonstration French Limited Site Phase III, April, 1987

40. In Situ Bioremediation Demonstration French Limited April, 1987 Monthly Report, Equipment Evaluation Phase IV

41. In Situ Bioremediation Demonstration French Limited June, 1987 Monthly Report, Equipment Evaluation Phase IV

42. In Situ Bioremediation Demonstration French Limited July, 1987 Monthly Report, Equipment Evaluation Phase IV

43. In Situ Bioremediation Demonstration French Limited August, 1987 Monthly Report, Equipment Evaluation Phase IV

44. In Situ Bioremediation Demonstration French Limited November, 1987 Monthly Report, Equipment Evaluation Phase IV

45. In Situ Bioremediation Demonstration French Limited December, 1987 Monthly Report, Equipment Evaluation Phase IV

46. In Situ Bioremediation Demonstration French Limited January, 1988 Monthly Report, Equipment Evaluation Phase IV

47. In Situ Bioremediation Demonstration French Limited February, 1988 Monthly Report, Equipment Evaluation Phase IV

48. In Situ Bioremediation Demonstration French Limited March, 1988 Monthly Report, Equipment Evaluation Phase IV

49. In Situ Bioremediation Demonstration French Limited April, 1988 Monthly Report, Equipment Evaluation Phase IV

50. In Situ Biodegradation Demonstration French Limited May/June 1988 Monthly Report, Equipment Evaluation Phase IV

51. In Situ Bioremediation Demonstration French Limited July, 1988 Monthly Report, Equipment Evaluation Phase IV

52. In Situ Bioremediation Demonstration French Limited August, 1988 Monthly Report, Equipment Evaluation Phase IV

53. In Situ Bioremediation Demonstration French Limited September, 1988 Monthly Report, Equipment Evaluation Phase IV

54. Supplemental Biodegradation Equipment Evaluation French Limited Site - Phase IV, September 26, 1988

55. In Situ Biodegradation Demonstration Phase III Quality Assurance Project Plan for French Limited Site, March, 1987

56. Addendum to Quality Assurance Project Plan for the French Limited Site In Situ Biodegradation Demonstration Phase III, February 16, 1990

57. Site Safety and Health Plan French Limited Site - Phase III, April 1987 (Revision 2)

58. Remedial Action Plan Volume I - September, 1990 (Updated from April, 1990)

59. Remedial Action Plan Volume I - April, 1990

60. Remedial Action Plan Volume II Quality Assurance April, 1990

61. Remedial Action Plan Volume II Quality Assurance June, 1990
Appendix A - Quality Assurance Sampling Procedures and
Appendix B - Analytical Methods - B.1 - B.53, September 22, 1989
Revised September 28, 1990

62. Remedial Action Plan Volume II Quality Assurance September, 1990 (Updated from April 1990) Revised June 3, 1991

63. Remedial Action Plan Volume III - Health and Safety, July 20, 1990

64. Remedial Action Plan Volume IV - Spill and Volatile Organic Release Contingency Plan (April 6, 1990)

65. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, May, 1990
    Page v.i.3 Missing

66. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, July 20, 1990, (Updated from May, 1990)

67. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume I, February 1,1990

68. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume II, February 1, 1990

69. 1988 Slough Investigation Report French Limited Site, October 1988 (2 Copies)

70. Ambient Air Impact Risk Assessment Report, May 5, 1989

71. In Situ Biodegradation Demonstration Report Volume I Executive Summary, October 30, 1987 Revised 11-11-87

72. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume I, November 30, 1987

73. Workplan for the Shallow Aquifer Pumping Tests for the French Limited Site, July 22, 1988
    Extra Page (Map) Between Pages 6 and 7
    Page 80 Missing

74. French Limited Site Hurricane Gilbert Preparation Report, October, 1988

75. Potable Water Well Installation Report French Limited Site, December 7, 1988

76. Bioresidue Fixation Alternatives Evaluation Report French Limited Site March 20, 1989

77. Hydrogeologic Characterization Report, March 1989

78. Hydrogeologic Characterization Report - Appendices, March 1989

79. San Jacinto River May 19, 1989 Flood Event Report, June 1989

80. Riverdale Lake Area Remediation Program August 15, 1989

81. Post San Jacinto River May 1989 Flood Event Soils and Water Analysis Program - Volume I, August 16, 1989

82. Post San Jacinto River I989 Flood Event Soil and Water Analysis Program Volume II Appendix A

83. Post San Jacinto River I989 Flood Event Soil and Water Analysis Program Volume III Appendix A, August 16, 1989

84. Flood and Migration Control Wall Design Report, August 16, 1989

85. Flood and Migration Control Wall Design Report Appendix C Access Way Design, September, 1989

86. North Pit Remediation Report French Limited Site, November 6, 1989

87. Installation Report for Flood and Migration Control Wall Appendix C - Pile Driving Inspection Report January 8, 1990

88. Flood Wall Gate Test Report French Limited Site, February 1990

89. Installation Report for Flood and Migration Control Wall, January 8, I990

90. Installation Report for Flood and Migration Control Wall
Appendix A - ENSR Site Logs

91. Installation Report for Flood and Migration Control Wall
Appendix 5B - Inspection Reports

92. French Limited Remediation Design Report - Executive Summary
Bioremediation/Shallow Aquifer, July, 1991

93. French Ltd. Remediation Design Report, Executive Summary
-Bioremediation
-Shallow Aquifer

94. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume I of III - Summary Report and Appendices A-H, July 1991

95. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume II of III - Appendices I-M, June 1991

96. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume III of III - Appendices N-P, June 1991

97. Bioremediation Facilities Design Report Volume II of IV Appendices, Reports and Calculations (March 20, 1991)

98. Bioremediation Facilities Design Report Volume III of IV Appendix E - Design Specifications (March 20, 1991)

99. Bioremediation Facilities Design Report Volume IV of IV - Air Monitoring, March 20, 1991

100. Public Health Assessment for French Limited March 30, 1993 from U.S. Department of Health and Human Services

101. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 1, Report, Appendices A-E

102. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 2, Appendix F

103. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 3, Appendix F continued

104. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 4, Appendix G

105. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 5, Appendix H

106. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 6, Appendix H continued

107. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (5-21-87)

108. Summary of Remedial Alternative Selection 1988

109. Declaration for the Record of Decision 1988

110. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (2-11-88) (Updated from June 21, 1987)

111. Consent Decree between the Federal Government and the FLTG

112. French Limited Superfund Site Community Relations Revised Plan August, 1989 - Jacob's Engineering

113. Results of the French Limited Task Group Survey (Goldman and Company) April, 1987

114. Goldman Public Relations Clipping Report

115. BioGEE International, Inc., Project Report Biotreatability Study Using Isolated Indigenous Organisms, April, 1994

116. Monthly Progress Report, January 1992

117. Monthly Progress Report, January, 1992 Appendices A-C

118. Monthly Progress Report, January, 1992 Appendices E, F

119. Monthly Progress Report, January, 1992 Appendices G

120. Monthly Progress Report, February, 1992

121. Monthly Progress Report, February, 1992 Appendices A-B

122. Monthly Progress Report, February, 1992 Appendices C 1, C 2

123. Monthly Progress Report, February, 1992 Appendices D-E

124. Monthly Progress Report, March, 1992

125. Monthly Progress Report, March, 1992, Appendix A

126. Monthly Progress Report, April, 1992

127. Monthly Progress Report, April, 1992, Appendices A-B

128. Monthly Progress Report, May, 1992

129. Monthly Progress Report, May, 1992, Appendices A-B

130. Monthly Progress Report, June, 1992

131. Monthly Progress Report, June, 1992, Appendices A-B

132. Monthly Progress Report, July 1992

133. Monthly Progress Report, July 1992, Appendices A-B

134. Monthly Progress Report, July 1992, Appendices B1-B22 Vol. 1 of 3

135. Monthly Progress Report, July 1992, Appendices B1-B22 Vol. 2 of 3

136. Monthly Progress Report, July 1992, Appendices B1-B22 Vol. 3 of 3

137. Monthly Progress Report, August, 1992

138. Monthly Progress Report, August, 1992, Appendices A-B

139. Monthly Progress Report, September, 1992

140. Monthly Progress Report, September, 1992, Appendices A-B

141. Monthly Progress Report, October, 1992

142. Monthly Progress Report, October, 1992, Appendices A-B

143. Monthly Progress Report, November, 1992

144. Monthly Progress Report, November, 1992 Appendices A-B

145. Monthly Progress Report, December, 1992

146. Monthly Progress Report, December, 1992 Appendices A, B

147. Monthly Progress Report, January, 1993

148. Monthly Progress Report, February, 1993

149. Monthly Progress Report, March, 1993

150. Monthly Progress Report, April, 1993

151. Monthly Progress Report, May, 1993

152. Monthly Progress Report, June, 1993

153. Monthly Progress Report, July, 1993

154. Monthly Progress Report, August, 1993

155. Monthly Progress Report, September, 1993

156. Monthly Progress Report, October, 1993

157. Monthly Progress Report, November, 1993

158. Monthly Progress Report, December, 1993

159. Monthly Progress Report, January, 1994

160. Monthly Progress Report, February, 1994

161. Monthly Progress Report, March, 1994

162. Monthly Progress Report, April, 1994

163. Monthly Progress Report, May, 1994

164. Monthly Progress Report, June, 1994

The following volumes are missing:

166. Feasibility Study Report, March 1987, Executive Summary
ii-iv Missing
ix-xiv Missing
Pages 1-5 thru 1-13 Missing
No Appendix F Component Description and Costing Information
(Only Appendix D with Numbered Pages)

166. In Situ Biodegradation Demonstration Report French Limited Site Volume XIII Appendices, November 30, 1987

At the Crosby library...

1. Remedial Investigation Report - June, 1986

2. Remedial Investigation Appendices Volume I June, 1986 Revised from Feb. 1986

3. Remedial Investigation Appendices Volume I I June, 1986 Revised from Feb. 1986

4. Remedial Investigation Appendices Volume III February, 1986
   Pages 1 and 2 of 10 Res. Engr Tab Missing
   Analytical Report Worksheet 7-8-9-10 Missing
   Pages 1 and 2 of 6 Missing
   Tab 9 H 1-8 Missing, H 11-19 Missing, Page 1 of 10 Missing
   Page 3 Worksheet Missing
   Tab 10 H 1-3 Missing, Page 3-6 of 6 Missing, Page 1-6 Missing
   Tab 12 Page 2-10 of 10 Missing

5. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume I, December, 1986

6. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume II, Appendices, December 1986

7. 1986 Field Investigation Hydrology Report, December 19, 1986

8. Feasibility Study Report, March 1987

9. Feasibility Study Report, March 1987

10. French Limited Site Focused Feasibility Study, May 1987

11. Endangerment Assessment Report February 1987

12. Endangerment Assessment Report April 1987

13. Endangerment Assessment Report April 1987

14. In Situ Biodegradation Demonstration Report Volume I Executive Summary October, 1987 (Revised 12-15-87)

15. In Situ Biodegradation Demonstration Report Volume II October 30, 1987

16. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume I, November 30, 1987
    Missing Supplements to 5-6 and 7 to 10

17. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume II, November 30, 1987 + Appendices

18. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume III, November 30, 1987 + Appendices

19. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume IV, November 30, 1987 -Appendices

20. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume V - Appendices, November 30, 1987

21. Results of the French Limited Task Group Survey (Goldman and Company) April 1987

22. Goldman Public Relations Clipping Report

23. Consent Decree between the Federal Government and the FLTG

24. Consent Decree between the Federal Government and the FLTG

25. Laboratory Evaluation of Biodegradation at the French Limited Site, December 1986.

26. Field Evaluation of Biodegradation at the French Limited Site (Phase II) Volume I, March, 1987

27. Bioremediation Facilities Design Report Volume II of IV Appendices, Reports and Calculations March 20, 1991

28. Bioremediation Facilities Design Report Volume III of IV Appendix E - Design Specifications March 20, 1991

29. Bioremediation Facilities Design Report Volume IV of IV Air Monitoring, March 20, 1991

30. Remedial Action Plan Volume I, September 28, 1990

31. Remedial Action Plan Volume II - Quality Assurance, Revised June 3, 1991

32. Remedial Action Plan Volume II - Appendix A - Quality Assurance Sampling Procedures and Appendix B - Analytical Methods - B.1 - B.53, September 28, 1990

33. Remedial Action Plan Volume III - Health and Safety, July 20, 1990

34. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, July 20, 1990

35. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, July 20, 1990

36. Hydrogeologic Characterization Report, March 1989

37. Hydrogeologic Characterization Report Appendices, March 1989

38. Supplemental Biodegradation Equipment Evaluation French Limited Site - Phase IV, September 26, 1988

39. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume I, February 1, 1990

40. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume II, February 1, 1990

41. Site Safety and Health Plan French Limited Site - Phase III, April 1987 (Revision 2)

42. San Jacinto River May 19, 1989 Flood Event Report, June 1989

43. Post San Jacinto River May 1989 Flood Event Soils and Water Analysis Program Volume I, August 16, 1989

44. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume II, Appendix A

45. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume III, Appendix A, August 16, 1989

46. 1988 Slough Investigation Report French Limited Site, October 1988

47. Flood and Migration Control Wall Design Report, August 16, 1989

48. Flood and Migration Control Wall Design Report (Flood is spelled incorrectly on Volume Cover) + Appendix C - Access way Design September 1989

49. Installation Report for Flood and Migration Control Wall January 8, 1990

50. Installation Report for Flood and Migration Control Wall Appendix A - ENSR Site Logs

51. Installation Report for Flood and Migration Control Wall Appendix B - Inspection Reports

52. Installation Report for Flood and Migration Control Wall Appendix C - Pile Driving Inspection Report January 8, 1990

53. Flood Wall Gate Test Report French Limited Site, February 1990

54. North Pit Remediation Report French Limited Site, November 6, 1989

55. Workplan for the Shallow Aquifer Pumping Tests for the French Limited Site, July 22, 1988
(Additional Title - Pumping Test Program for Shallow Alluvial Aquifer Zone)

56. French Limited Site Hurricane Gilbert Preparation Report October, 1988

57. Riverdale Lake Area Remediation Program, August 15, 1989

58. Addendum to Quality Assurance Project Plan for the French Limited Site In Situ Biodegradation Demonstration Phase III, February 16, 1990

59. Potable Water Well Installation Report French Limited Site, December 7, 1988

60. Bioresidue Fixation Alternatives Evaluation Report French Limited Site March 20, 1989

61. Ambient Air Impact Risk Assessment Report, May 5, 1989

62. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume I of III - Summary Report and Appendices A-H, July 1991

63. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume II of III - Appendices I-M, June 1991

64. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume III of III - Appendices N-P, June 1991

65. French Ltd. Remediation Design Report Executive Summary Bioremediation Shallow Aquifer July 1991

66. BioGEE International, Inc., Project Report Biotreatability Study Using Isolated Indigenous Organisms, April 15, 1994

67. Black EPA Binder

68. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 1, Report, Appendices A-E

69. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 2, Appendix F

70. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 3 Appendix F continued

71. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 4, Appendix G

72. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 5, Appendix H

73. CH2M Hill, Cell E Verification Remediation Report, May 1993, Volume 6, Appendix H continued

74. Equipment Evaluation Phase !V Report November, I987 Monthly Report

75. Equipment Evaluation Phase !V Report December, I987 Monthly Report

76. Microfiche Field Reports 1988 -small box

77. Monthly Progress Report, January, 1992

78. Monthly Progress Report, January, I992, Appendices A-C

79. Monthly Progress Report, January, 1992, Appendix D

80. Monthly Progress Report, January, 1992, Appendices E-F

81. Monthly Progress Report, January, 1992, Appendix G

82. Monthly Progress Report, February, 1992

83. Monthly Progress Report, February, 1992, Appendices A-B

84. Monthly Progress Report, February, 1992, Appendices C-1

85. Monthly Progress Report, February, 1992, Appendices C-2

86. Monthly Progress Report, February, 1992 , Appendices D-E

87. Monthly Progress Report, March, 1992

88. Monthly Progress Report, March, 1992, Appendix A

89. Monthly Progress Report, April, 1992

90. Monthly Progress Report, April, 1992, Appendices A-B

91. Monthly Progress Report, May, 1992

92. Monthly Progress Report, May, 1992, Appendices A-B

93. Monthly Progress Report, June, 1992

94. Monthly Progress Report, June, 1992, Appendices A-B

95. Monthly Progress Report, July, 1992

96. Monthly Progress Report, July, 1992, Appendices A-B

97. Monthly Progress Report, July, 1992, Appendices B1-B22 Vol. 1 of 3

98. Monthly Progress Report, July, 1992, Appendices B1-B22 Vol. 2 of 3

99. Monthly Progress Report, July, 1992, Appendices B1-B22 Vol. 3 of 3

100. Monthly Progress Report, August, 1992

101. Monthly Progress Report, August, 1992, Appendices A-B

102. Monthly Progress Report, September, 1992

103. Monthly Progress Report, September, 1992, Appendices A-B

104. Monthly Progress Report, October, 1992

105. Monthly Progress Report, October, 1992, Appendices A-B

106. Monthly Progress Report, November, 1992

107. Monthly Progress Report, November, 1992, Appendices A-B

108. Monthly Progress Report, December, 1992

109. Monthly Progress Report, December, 1992, Appendices A-B

110. Monthly Progress Report, January, 1993

111. Monthly Progress Report, February, 1993

112. Monthly Progress Report, March, 1993

113. Monthly Progress Report, April, 1993

114. Monthly Progress Report, May, 1993

115. Monthly Progress Report, June, 1993

116. Monthly Progress Report, July, 1993

117. Monthly Progress Report, August, 1993

118. Monthly Progress Report, September, 1993

119. Monthly Progress Report, October, 1993

120. Monthly Progress Report, November, 1993

121. Monthly Progress Report, December, 1993

122. Monthly Progress Report, January, 1994

123. Monthly Progress Report, February, 1994

124. Monthly Progress Report, March, 1994

125. Monthly Progress Report, April, 1994

126. Monthly Progress Report, May, 1994

127. Monthly Progress Report, June, 1994

The following volumes are missing:

128. Public Health Assessment Addendum - March 30, 1993
Missing Page 27 and 31

129. In Situ Biodegradation Demonstration French Limited Monthly Report for July, 1988

130. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (February 11, 1988) (Additional Title - Record of Public Meeting to Discuss and Accept Public Comments on the Proposed Remedy for French Limited Site)

131. In Situ Biodegradation Demonstration French Limited Monthly Report for January, 1988 or January Monthly Report Equipment Evaluation Phase IV.

12 Large Brown Folders:

1. Administrative Record Index - 2 folders
   Administrative Record 09-26-79 thru 05-29-83
   Administrative Record 06-03-83 thru 11-28-83
   Administrative Record 02-28-84
   Administrative Record 03-09-84
   Technical Comments on Remediation Investigation Report 2-84
   Supplemental Investigation - Resource Engr. 1-84
   Administrative Record 3-9-84

2. Administrative Record 08-31-84
   Administrative Record 10-29-84 thru 01-22-85
   French Ltd. Technical and Regulatory Concepts for In-Place Closure, 09-84
   Supplementary Investigation, May 1984
   French Ltd. Field Activities Work Plan, February 1985
   Supplementary Investigation Attachments, May 1985

3. Administrative Record 02-04-85
   Remedial Investigation, Vol. I Report, April 1985
   Remedial Investigation, Vol. II Appendices, April 1985

4. Administrative Record 04-08-85 thru 11-26-85
   Administrative Record 02-14-86 thru 04-04-86
   Technical Report for Resource Engineering, 12-03-85
   Appendix QA Program for French Ltd., 12-18-85
   1985 Field Investigation Report Appendices, January, 1986
   1985 Field Investigation Report , January, 1986

5. Administrative Record 04-01-86
   Remedial Investigation Report Appendices, Vol. II, April, 1986

6. Administrative Record 4-1-86

7. Administrative Record 05-08-86 thru 05-12-86
   Administrative Record 06-01-86
   Administrative Record 01-05-87
   Remedial Investigation Report, June 1986
   Laboratory Evaluation of Biodegradation, 12-86
   1986 Field Investigation Hydrology Report, 12-86
   Endangerment Assessment Report, 2-87

8. Feasibility Study, March 1987

9. Administrative Report 03-11-87 thru 03-25-87
Administrative Report 4-1-87
Administrative Report 4-7-87
In Situ Biodegradation Demonstration Phase III QA Project Plan 3-87
Endangerment Assessment Report, 4-87
Proposed In Situ Biodegradation Demonstration French Limited Site Phase III 4-87

10. Administrative Report 4-15-87 thru 5-I-87
Administrative Report 5-21-87 thru 7-2-87
French Limited Focused Feasibility Study, ERT 5-87
Revised Field Evaluation of Biodegradation at French Site Phase II Vol. I
-Revised 7-10-87

11. Administrative Report 7-20-87 - 11-23-87
Administrative Report Undated Documents 000122-000134
In Situ Biodegradation Demonstration Report Vol. I Executive Summary 10-87
French Limited Site Work Plan Vol. I Project Activities and Sample Plan

12. Texas Air Control Board Regulations I thru IX
Standard Exemption List
Application for Permit

During the month of July, the status of both libraries have been reviewed and the above information found to be accurate.

9.0 WETLANDS RESTORATION

9.1 Summary of Activities and Progress

TNRCC issued formal approval of Brownwood site.

Continued with detailed design for the Brownwood site; modified layout to accommodate property ownership issues.

Submitted archeological plan to Corp. of Engineers.

Corp. of Engineers issued the 404 permit for public comment; there have been no public comments.

Finalized access agreement with City of Baytown.

9.2 Problem Areas and Solutions

Problem	Recommended Solution
Land ownership status.	Survey site in detail to precisely define status. Baytown to purchase full ownership of critical lots.
Impact on archeological artifacts.	Relocate tidal connections to avoid shell middens.
Maintain adequate buffer zone.	Baytown will close perimeter roads to vehicle traffic.
Secure necessary permits.	Submit Corp. of Engineers 404 permit application.

9.3 Problems Resolved

Problem	Solution
Agency approval of restoration site.	TNRCC approved the Brownwood site.
Baytown City Council approval.	Approved on July 28, 1994.

9.4 Deliverables Submitted

Responses to Corp. of Engineers.

9.5 Upcoming Events and Activities

Baytown to acquire selected lots if available at reasonable terms.

Complete detailed design for Brownwood.

Identify and locate flora species.

Secure Corp. of Engineers 404 permit.

Develop detailed cost estimate for Brownwood.

Develop restoration schedule.

Develop forecast of maintenance requirements.